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AS SEEN ON TV

WHY TELEVISION'S BIGGEST NAMES ARE ON THE LOOKOUT FOR GAMES DEVELOPERS

DEVELOP AWARDS FINALISTS ■ START-UP GUIDE ■ THE RETURN OF FMV

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13 beta

KEEN SCREEN
As TV, film and games continue to blur the boundaries between mediums, we speak to the BBC, ITV, Channel 4 and more about breaking brands out of the box and putting them in the hands of devs

09 alpha

BEST OF THE BEST
This year's finalists for the Develop Awards are revealed – is your studio among those up for a prize?

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START-UP SECRETS
Get your fledgling firm soaring with help from the experts in our series of special features

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FILM STARS
Why full-motion video is making a critically-acclaimed comeback

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SMASHING GOOD TIME
Under the hood of *Carmageddon: Max Damage*'s vehicular physics

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STOIC'S SAGA
The *Banner Saga* dev looks back on its ambitious RPG

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Editorial

BRAND DESIGNS

Time for a confession: I'm a sucker for a licensed game. It's why my phone is filled with endless runner and match-three titles that I know are all exactly the same and just a few weeks away from deletion.

Many of these, I admit, are nothing special. But there's something to be said for the developers who do take an IP from another medium and try to create a great gaming experience with it – even if that's just drawing you into a familiar universe using extremely familiar mechanics.

> **Devs should never stop trying to create new worlds, but nor should they dismiss the chance to play with those already established.**

Fictional worlds and compelling stories don't just capture our imagination; they beg for our participation. We all want to be a Jedi, attend Hogwarts, command the Enterprise, play the Game of Thrones.

Developers should never stop trying to create new worlds of their own, but nor should they dismiss the opportunity to play with those already established in other media – particularly if your team are already fans.

Numerous experts say that the only way to break into the Top 10 on mobile is to have a brand behind your game, but that shouldn't be your prime motivation. There are millions of fans out there searching for ways to interact with their favourite characters – you have the power to deliver that. Embrace it, enjoy it – and head to page 13 to find out how TV broadcasters can help you get started.

James Batchelor
jbatchelor@nbmedia.com

HARD BEGINNINGS
Shahid Ahmad on the tough choices start-ups face
P08

SOMETHING FROM NOTHING
Dlala's Aj Grand-Scrutton recounts the studio's journey so far
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PRICELESS ADVICE
Nick Gibson reveals the free support devs can make use of
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THE DEVELOP AWARDS 2016: AND THE FINALISTS ARE...

108 companies and 36 games shortlisted, with winners to be revealed on July 15th in Brighton

After hundreds of nominations, hours of deliberation and countless tough choices, the finalists for the 2016 Develop Awards have been chosen.

It's an impressive line-up of studios from across the UK and Europe, spanning work on 36 acclaimed titles. In total, there are 108 companies in the running, encompassing not only developers, but also tools providers, services firms, outsourcers and specialists in VFX, audio, QA and recruitment.

The biggest competition is between CD Projekt Red's *The Witcher III*, Supermassive's *Until Dawn*, Remedy's *Quantum Break* and The Chinese Room's *Everybody's Gone To The Rapture*, which have four nominations each.

Also notable is Frictional Games' three nominations – two for sci-fi horror game *Soma* – as well as UK indie Sam Barlow, who receives three listings for innovative crime title *Her Story*.

As has been previously announced, *Metal Gear Solid* creator Hideo Kojima will receive this year's Development Legend award, presented by fellow winner Mark Cerny.

We will be announcing the winner of the 2016 Studio of the Year award in the coming weeks.

The winners will be announced during this year's awards ceremony at the Brighton Hilton Metropole on Wednesday, July 13th during Develop: Brighton 2016.

This year's awards are supported by headline partner CV Bay, gold partners MoGI Group, Amiqus, Epic Games, Sumo Digital, Crytek, King, table gift partner OPM Jobs, exclusive drinks reception partner Keywords Studios, and event partner Tandem Events. Epic Games is also an award partner, as is Aardvark Swift.

Contact Charlotte Nangle via **cnangle@nbmedia.com** to find out about the opportunities available before, during and after the Awards.

To book your place at the event, email Georgia Blake via **gblake@nbmedia.com** or book online at **developawards.com**. ■

DEVELOP AWARDS 2016: THE FINALISTS

CREATIVITY

NEW GAMES IP – PC/CONSOLE
Everybody's Gone To The Rapture – The Chinese Room
Her Story – Sam Barlow
Quantum Break – Remedy
Soma – Frictional Games
Tom Clancy's The Division – Massive Entertainment
Until Dawn – Supermassive Games
Unravel – Coldwood Interactive

NEW GAMES IP – MOBILE
Battlehand – Another Place
DogBiscuit – Blackstaff Games
Omega Agent – Fireproof Games
Raceline CC – Rebellion
Rival Kingdoms – Space Ape Games
Safari Tales – Kuato Studios
Sandstorm: Pirate Wars – Ubisoft
Wonky Ship – Kiz Studios

USE OF A LICENCE OR IP
Batman: Arkham Knight – Rocksteady
Lego Dimensions – TT Games
Mad Max – Avalanche Studios
Star Wars: Twilight of the Republic (Disney Infinity 3.0) – Ninja Theory
The Escapists: The Walking Dead – Mouldy Toof
The Witcher III – CD Projekt Red
Warhammer 40,000: Freeblade – Pixel Toys

VISUAL ARTS
Everybody's Gone To The Rapture – The Chinese Room
Dungeon of the Endless – Amplitude Studios
Quantum Break – Remedy
Project CARS – Slightly Mad Studios
The Climb – Crytek
The Witcher III – CD Projekt Red
Unravel – Coldwood Interactive
Until Dawn – Supermassive Games

AUDIO ACCOMPLISHMENT
Everybody's Gone To The Rapture – The Chinese Room
Quantum Break – Remedy
Soma – Frictional Games
Star Wars Battlefront – EA DICE
Sublevel Zero – Sigtrap Games
The Witcher III – CD Projekt Red
Unravel – Coldwood Interactive
Until Dawn – Supermassive Games

USE OF NARRATIVE
Everybody's Gone To The Rapture – The Chinese Room
Her Story – Sam Barlow
Quantum Break – Remedy
Reigns – Nerial
RuneScape – Jagex
Soma – Frictional Games
The Witcher III – CD Projekt Red
Until Dawn – Supermassive Games

TECH & SERVICES

DESIGN & CREATIVITY TOOL
Dehumaniser – Krotos
Enlighten – Geomerics
Fabric – Tazman Audio
Granite – Graphine Software
SpeedTree For Games – SpeedTree
Substance Painter 2 – Allegorithmic
Wwise – Audiokinetic
Yebis 3 – Silicon Studio

PRODUCTION TOOL
Favro – Favro
GameBench – GameBench
Gamelift – Amazon
GameSparks – GameSparks
Marmalade Platform – Marmalade Technologies
Perforce – Perforce Software
Simplygon – Donya Labs
Umbra 3 – Umbra Software

ENGINE
CryEngine – Crytek
GameMaker: Studio – YoYo Games
GameGuru – The Game Creators
Lumberyard – Amazon
PlayCanvas – PlayCanvas
Stingray – Autodesk
Unity 5 – Unity Technologies
Unreal Engine 4 – Epic Games

CREATIVE OUTSOURCER – AUDIO
93 Steps – *Warhammer 40,000: Regicide*
High Score Productions – *War Thunder* trailer
Nimrod Productions – *Horizon: Zero Dawn* trailer
Side – *The Witcher III*
Soundcuts – *Quantum Break*
The Audio Guys – *Forza Motorsport 6*

CREATIVE OUTSOURCER – VISUAL & DEVELOPMENT
Audiomotion – *Quantum Break*
Dimensional Imaging – *Quantum Break*
Axis – *Halo 5: Guardians* opening
D3T – *The Witcher III* (PS4)
Realtime UK – *Rare Replay* intro
Cubic Motion – *Hellblade* GDC demo

SERVICES
DeltaDNA
Fireteam
Flipbook
Keywords Studios
Player Research
Sperasoft

QA & LOCALISATION
Localize Direct
Lollipop Robot
MoGI Group
Testology
Testronic
Univerally Speaking
VMC

RECRUITER
Aardvark Swift
Amiqus
Avatar Games Recruitment
CV Bay
Datascope
OPM
Skillsearch

PUBLISHING HERO
All 4 Games
Badland UK
Curve Studios
Devolver Digital
ID@Xbox
KISS
SCEE Strategic Content
Team17

MICRO STUDIO
Acid Nerve
Dreamloop Games
Frictional Games
Guerilla Tea
Mouldy Toof
Squarehead Studios
Sam Barlow
Wales Interactive

INDEPENDENT STUDIO
CD Projekt Red
Codemasters
Remedy Entertainment
Rovio
Space Ape Games
Supercell
Supermassive Games
The Chinese Room

IN-HOUSE STUDIO
Creative Assembly
EA DICE
FreeStyle Games
IO Interactive
Massive Entertainment
Rocksteady
TT Games

NEW STUDIO
A Fox What I Drew
No Code Studio
Sigtrap Games
Torque Studios
Triangular Pixels
Unicube
West Coast Studios

DEVELOPMENT LEGEND
Hideo Kojima

AT A GLANCE

MAY 10TH

Uncharted 4: A Thief's End

Will Nathan Drake steal Sony a new first-party IP in his last adventure?

MAY 13TH

Doom

The iconic FPS is back in a hellish reboot. Where's the rocket launcher?

MAY 13TH

Angry Birds

Rovio's flighted fowls are catapulted to the silver screen.

MAY 24TH

Overwatch

AKA Blizzard's definitely-not-*Team-Fortress* cartoon class-based shooter.

MAY 26TH

Mirror's Edge Catalyst

Have Faith: EA's free-running franchise is back – without the guns.

DIARY DATES

Interface

May 5th

London, UK

interface.events

MAY

GamesBeat Summit
May 3rd to 4th
Sausalito, US
bit.ly/1T3TzHd

Game UX Summit
May 12th
Durham, US
epicgames.com/game-ux-summit

DevGamm
May 12th to 13th
Moscow, Russia
devgamm.com

Digital Dragons
May 16th to 17th
Krakow, Poland
digitaldragons.pl/en

Casual Connect Asia
May 17th to 19th
Singapore
asia.casualconnect.org

Nordic Game Conference
May 18th to 20th
Malmö, Sweden
conf.nordicgame.com

Power of Play
May 20th to 21st
Bellevue, US
powerofplay.us

JUNE

E3
June 14th to 16th
Los Angeles, US
e3expo.com

EVENT SPOTLIGHT

BRAINS EDEN
Where: Anglia Ruskin University, Cambridge
When: June 24th to 27th
What: The largest student games jam in the UK, Brains Eden invites teams from across Europe to design and develop a game based on a surprise theme within 48 hours. Experts at the show include Guerrilla Games, PlayStation, Unity and Jagex, with internships at major studios up for grabs for participants.
www.brainseden.net

COMING SOON

DEVELOP #172

JUNE 2016: THE E3 ISSUE

As the games industry's biggest event returns for another year of big reveals, we speak to QA and localisation experts about the changing demands and increasing global reach of modern games, plus explore how devs are bringing artifical intelligence to life.

DEVELOP #173

JULY 2016: THE AUDIO ISSUE

Listen up: we take an auditory tour through the tools and techniques behind the industry's finest soundscapes, from audio effects to voice acting and soundtracks. We also throw back the curtain on the best games-as-a-service practices and requirements for mobile and web devs.

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Gears of War: Ultimate Edition
Image courtesy of The Coalition/Microsoft Studios

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"Houdini's procedural workflows allowed us to flex our creative muscles when developing compelling VFX for **Gears of War: Ultimate Edition.**"

Colin Penty | CG Supervisor | The Coalition

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ON BEGINNINGS

Shahid Ahmad discusses some of the hard choices new developers face

Beginnings are beautiful.

The laws of physics were established shortly after the Big Bang. Before the laws were established, the Universe could have become anything.

A blank canvas is a licence to create. Feared by all artists – whether they be composers, poets, novelists or programmers – a blank canvas is also feared by the creators of a new business. As a start-up founder, you get to create the laws of your universe. Who you hire, which sector you will operate in, how you're funded – all of this is down to the founders. You are the composer of your new business. So what kind of music will you create?

It's not for me to advise you on what you should make. I would, however, strongly counsel boldness and audacity. What is the point otherwise? Is your purpose just to make a refinement of what already is? If so, then prepare yourself for a ton of competition.

It's tempting to go in the direction that so many others are headed, but what if they're heading for a cliff? What if the leaders are the only ones who are going to succeed while the followers are going to get blocked at the gate? If you're in an established business, it's difficult for you to radically change the course of that business. In 2012, I described it as "steering supertankers". When you're a start-up, you have one chance to set the direction before momentum that can only be interrupted by a cash flow crisis will carry you away to your destination.

Make some hard choices at the start. Only hire people who totally live your mission. Recent studies have shown the importance of teamwork over star performers, so it's not always necessary to hire the 'best'. Sometimes that will mean turning down excellent candidates.

Consider what makes you unique. Consider the itch you want to scratch. Maybe others want that itch scratched, too? Patricia Ryan Madson puts it best in *Improv Wisdom* when she asks: "What would not get done if you were not here?"

DREAM BIG

There has never been a time in history where the route from dream to reality has been so short. What is virtual reality if not lucid dreaming? Before too long, literally anything you can imagine will become 'real' around you. If you think that's fanciful, you might want to ask yourself how you're so sure you're not in a form of virtual reality at the moment. After all, we never perceive total reality. It's filtered by our data sensors, otherwise known as the senses. As VR approaches the bandwidth of our senses, the lag between dream to reality could approach zero. So dream, and make your dream a reality.

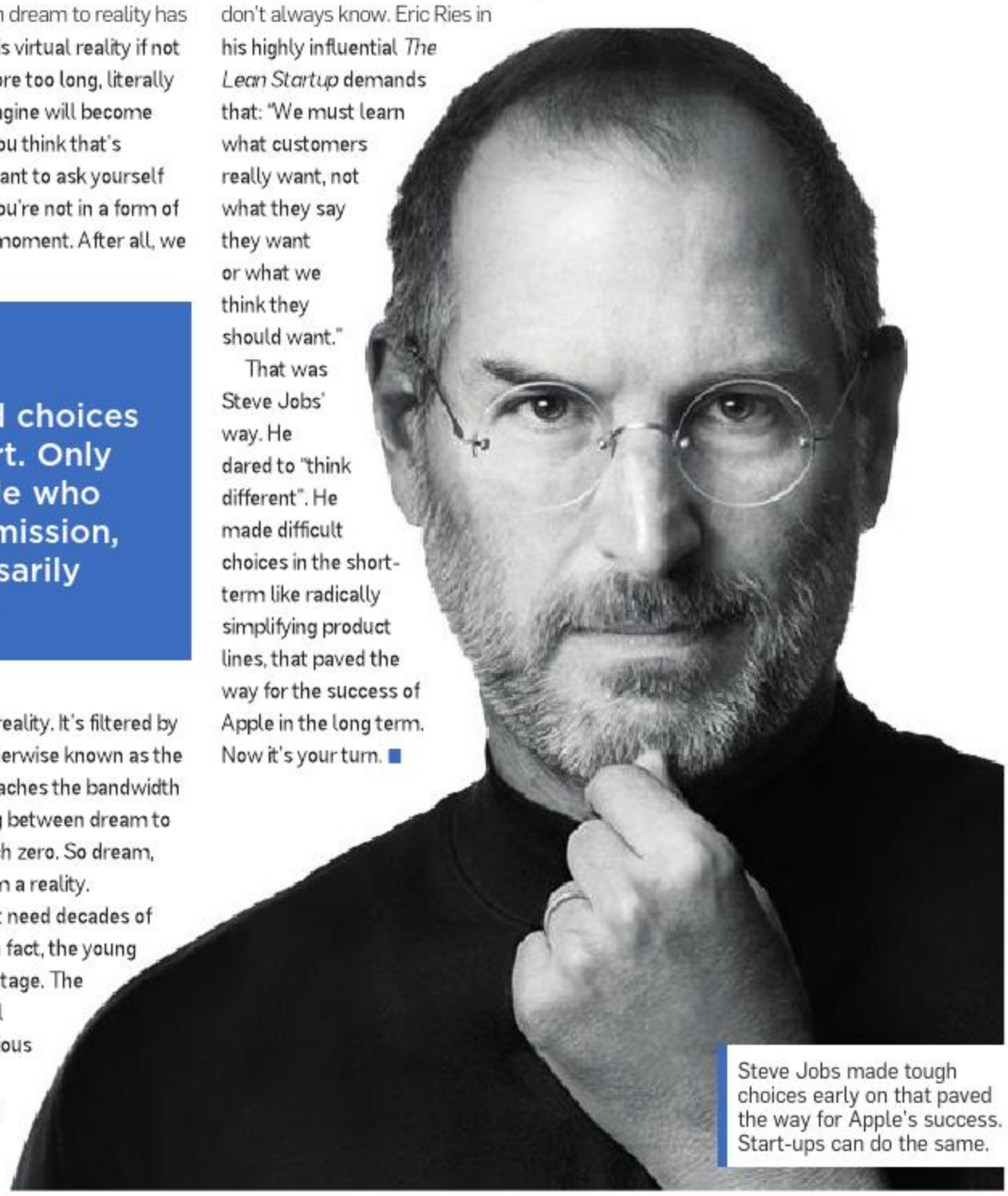
> Make hard choices at the start. Only hire people who live your mission, not necessarily the 'best'.

You certainly don't need decades of experience for this. In fact, the young have a definite advantage. The pace of technological change is now so furious that the knowledge you gained five years ago is practically out of date. It's because everything is new every year – and again, this means the young have an advantage here.

From having created the laws of your own universe, let's come back down to earth; you're creating a business, and what is a business without customers? Your biggest challenge is in finding out what your customers want, and they don't always know. Eric Ries in his highly influential *The Lean Startup* demands that: "We must learn what customers really want, not what they say they want or what we think they should want."

That was Steve Jobs' way. He dared to "think different". He made difficult choices in the short-term like radically simplifying product lines, that paved the way for the success of Apple in the long term. Now it's your turn. ■

Shahid Ahmad is an independent developer, and previously head of strategic content at SCEE. You can find him on Twitter at **@shahidkamal.**



Steve Jobs made tough choices early on that paved the way for Apple's success. Start-ups can do the same.

MEANWHILE ON DEVELOP-ONLINE.NET

What developers can learn from tabletop games designers

bit.ly/1qDHrmw

'Don't put a machine gun in granny's hands': Tommy Palm on taking VR to the mainstream

bit.ly/1VUeyyy

Triggering emoitons in virtual reality with Frima Studios' Fated

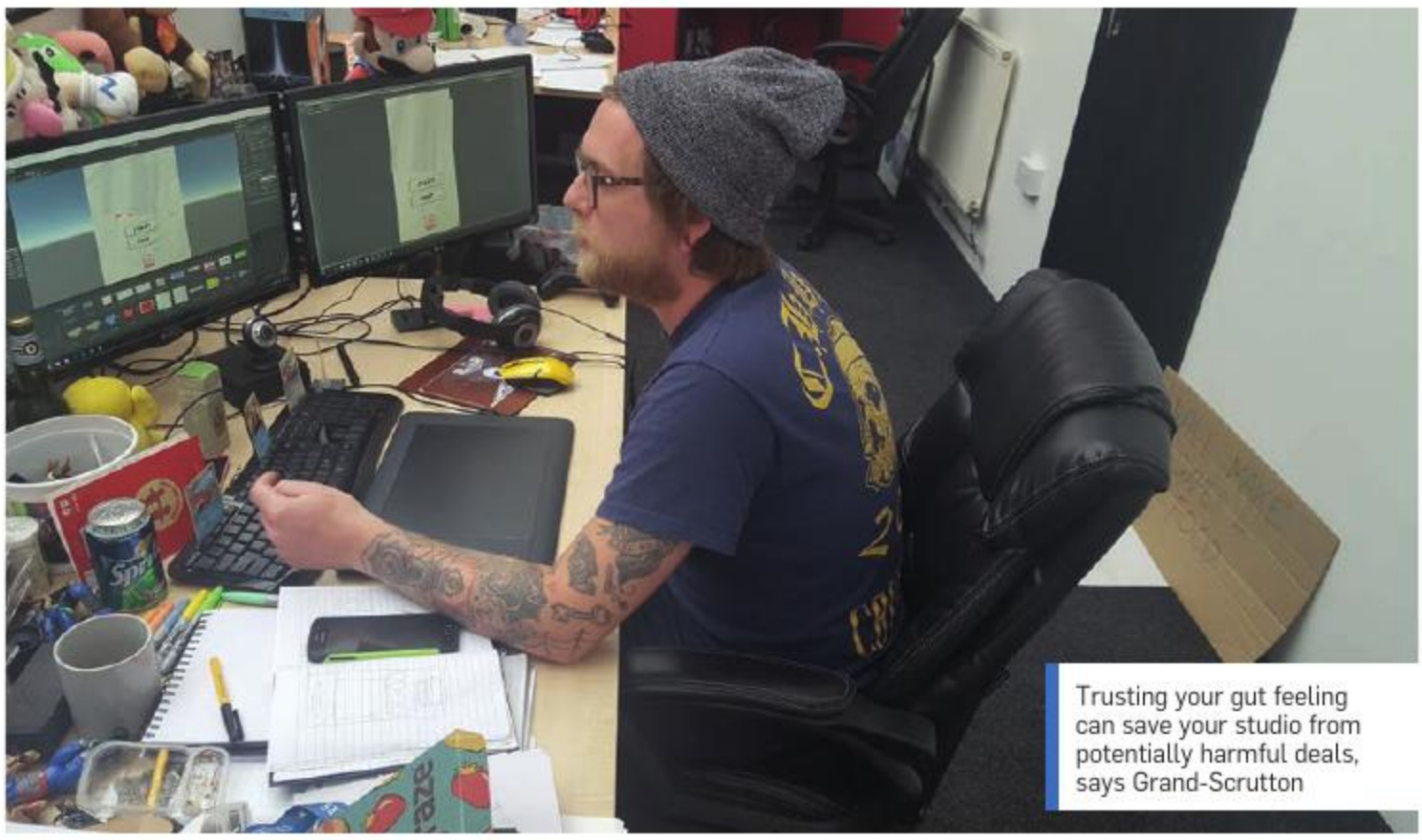
bit.ly/23UA2l1

GROWING FROM NOTHING

Dlala Studios' **Aj Grand-Scrutton** reflects on his own journey as a start-up

When I look back at all the crap we've been through over the last four years, I realise some of the things I've learnt whilst growing from two guys in a garage to 14 guys and gals in an office.

The tips below are some of the most important things for us as a studio. This isn't one size fits all – this is how we did it.



Trusting your gut feeling can save your studio from potentially harmful deals, says Grand-Scrutton

EMPLOYEES COME FIRST

We are a completely employee-driven company. A large amount of our policies and procedures are based on the things Craig [Thomas, Dlala co-founder and CCO] and I wished we'd had as employees or ways in which we wish we had been treated better.

I am a massive believer in Richard Branson's saying: "Train people well enough so they can leave, treat them well enough so they don't want to."

However, it's important that you prepare for the worst. So whilst we have policies such as unlimited holiday, we still have everyone contractually on a set amount of holiday days. This means that if the processes are ever exploited, we have the ability to make changes.

HIRE RIGHT, NOT FAST

One of the scariest things I saw some of the big companies we've worked with do is just hire to fill a role within a timeframe. I understand that larger companies can have this pressure but this is terrifying to me. We've had three stages to our 'ramping up' in the last four years:

- **Stage 1:** Hire awesome people we worked with previously
- **Stage 2:** Hire awesome people we know personally
- **Stage 3:** Hire strangers. Oh, shit... We have to hire strangers

Every step of the way was scary, Stage 1 had mixed results for us. We had some superstar signings like Ben [Waring, tech lead], Loudon [St. Hill, game designer], Chris [Rickett, game programmer] and Grant [Allen, game designer] but there were also bad hires along the way too.

By the time we got to Stage 3, our hiring process had become reasonably long and for the right reasons.

GET A GOOD ACCOUNTANT

I cannot say this one enough. The best money that we spend at Dlala is on our accountants. We use Cannon Moorcroft based out of High Wycombe and they have saved us more money then we have spent on them and by a very large per cent. Not only do they handle our payroll, end of year accounts, VAT returns and director's end of year, but they also have helped us with our tax breaks and visa application processes.

> **No deal is more important than your studio and your team's well-being – remember that.**

At one point in the early days we were on the brink of having no money and they came through and helped us claim back on a project and we got enough money back to get us ticked over to the next project.

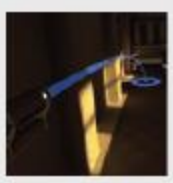
TRUST YOUR GUT

We run this studio based on our gut feelings. If a deal or a partnership doesn't feel right, we don't go for it. Up until now, we've been lucky that we've not had to sign any deals we're not comfortable with – and I hope we never have to. The only times we've not trusted our gut on hires or meetings we've always ended up regretting it. If your gut is saying no then your subconscious is trying to tell you something is up. No deal is more important than your studio and your team's well-being – remember that.

I've never claimed to know what I'm doing, I simply fumble around, take advice where I can and try to do the best possible. With that in mind, I am not sitting here pretending to be a guru of running a studio, I simply wanted to give a few bits of insight into how we do things. ■

AJ Grand-Scrutton is co-founder of Dlala Studios and will be discussing his studio's journey at Develop: Brighton. You can find out more at **www.developconference.com.**

Breaking down the (right) walls: Texturing Rainbow Six Siege's destructible world
bit.ly/1qLeoxM



How Portal and Unreal Tournament solved VR's movement problem
bit.ly/22rb5aJ

Beamdog CEO: 'We never thought a transgender character was a big deal'
bit.ly/20v8m05

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SHOESTRING START-UP TIPS

Gunjin Games director **Nick Gibson** offers vital advice for devs planning to form a new studio on a budget, from nabbing free software to scoring investment

Many High Street banks in the UK offer fee-free banking and business services to start-ups

I've founded and been involved in multiple start-ups over the years and have picked up an array of tips about where to get thousands of pounds of freebies and how start-ups can stay lean. Here's a selection.

GET WITH THE PROGRAMME

Most of the biggest names in tech run start-up programmes that offer software, services and service credit for free.

Microsoft's BizSpark programme is an absolute no-brainer for games developers, providing three years of free software to qualifying companies.

Facebook's FBStart programme offers free software and services, as well as advertising credit.

Amazon's AWS Activate programme offers up to $15,000 in promotional credit, plus a host of other free benefits.

Google Launchpad provides access to expert assistance, and some developers can also qualify for $100,000 in Cloud Platform credit.

SEEK EXPERT ADVICE

Mentors can provide invaluable start-up and studio management experience and expertise. They may also give you access to a much bigger network of industry, investor and other professional contacts than you might not achieve alone.

Many will add credibility and free publicity to your business and some might even become investors too.

> **Scrimping on legal advice can cause very expensive problems down the line.**
> *Nick Gibson, Gunjin Games*

LOOK FOR FREE MONEY

Free grant funding is offered in the UK nationally via a few programmes, such as the UK Games Fund and Innovate UK, as well as regionally.

Some areas, such as Wales and Scotland, offer considerable grants for relocating or establishing new studios there.

Also check out business accelerators, as these can provide office space, funding, mentoring and access to the most valuable start-up programmes.

MONEY MANAGEMENT

Most High Street banks in the UK have start-up business account offers that typically provide 12 to 24 months of fee-free banking and a range of free, albeit generic, business services.

Accounting costs can be substantially reduced with a bit of DIY, and the right accountant to check your work over for mistakes and make sure you file all your documents correctly.

Online accounting services like Xero and QuickBooks have a bit of a learning curve but thereafter can make the process a low-cost doddle.

LEGAL-EASE

Legal advice is the one area where scrimping can return to haunt you. Articles of association, employee and contractor agreements, subscription and shareholder agreements and options agreements can all be found online at low or no cost, but a failure to understand their full implications can cause very expensive problems down the line.

Thankfully, there are lots of law firms with games industry specialisation, most of which will be willing to do fixed price or heavily discounted work for start-ups. So ask around.

RECRUITMENT

Consultants can accelerate the process and provide high quality candidates, but cost a fortune.

Before turning to them, I would exhaust your industry contact network, use LinkedIn searches and industry forums, and keep an eye out for recently closed businesses; their owners will always want to see their employees avoid unemployment. ■

Nick Gibson is director of Gunjin Games, a mobile and tablet games start-up staffed by veteran developers based in Brighton, UK.
www.gunjingames.com

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IN-DEPTH FEATURES, INTERVIEWS AND ANALYSIS

THE WRITE CHOICE
Steven-Elliot Altman on the importance of narrative experts
P16

START-UP SPECIAL
Everything you need to get your new studio up and running
P18-22

LIVE-ACTION AND KICKING
Develop speaks to the devs at the forefront of FMV's return
P26

AS SEEN ON TV

Broadcasters are increasingly turning to games developers to engage broader audiences with their brands. **James Batchelor** finds out what opportunities this presents for studios

Discuss licensed games in any way, and you will inevitably spend most of your time talking about poorly-built film tie-ins or reskinned mobile games where familiar characters barely disguise tired mechanics.

You might not discuss, or even think about, TV.

And yet, some of the world's biggest broadcasters – from the UK's BBC and Channel 4 to US giant HBO – are reaching out to games developers to form new partnerships; not just commissioning titles to help promote current shows, but giving devs the chance to create something that can truly add to a famous brand. Even Cartoon Network held a game jam earlier this year to see what devs could come up with based on its newest show.

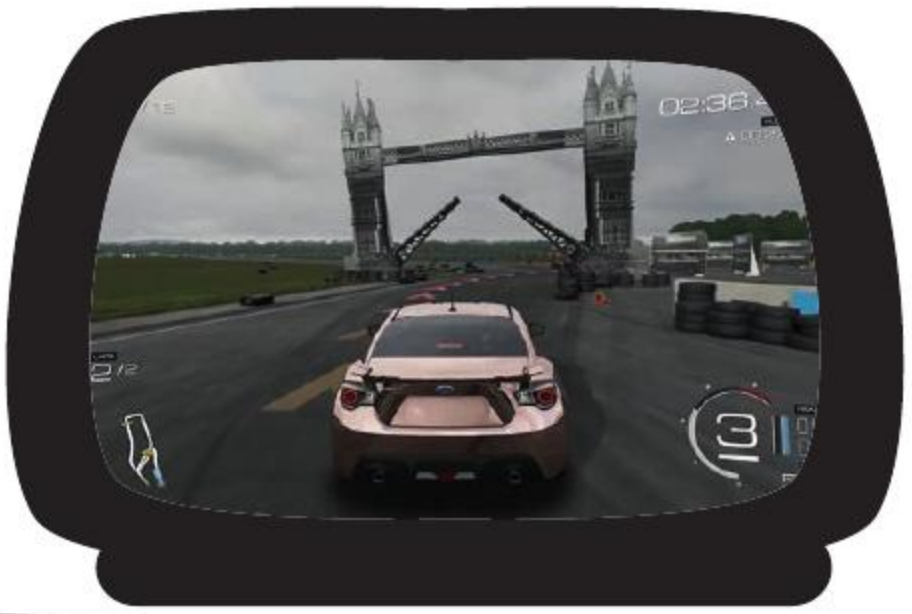
Colin MacDonald, head of Channel 4's All 4 Games publishing arm, says this is down to the growing convergence between games and other media, as well as audiences consuming more TV through smart devices.

"There has been a shift in broadcasters' way of thinking," he says. "In the past, they used to think of themselves as TV broadcasters for TV sets in the living rooms. Now they think of themselves as providers of content for different screens. A lot of their content is now shortform for people watching on phones on their commute – and video games are another part of that as well."

> **Having immediate access to a universe can save months of work.**
> *David Miller, ITV Studios*

Bradley Crooks, head of digital entertainment and games at BBC Worldwide, adds: "There has been a big surge in the strength of TV. People were saying it was a dying format five years ago, but now some of the biggest budgets in entertainment are for TV series – just look at what Netflix are doing with their Originals.

"Big shows like *The Walking Dead* have shown that it is possible to transfer IP into the gaming area and be very successful with it. That's made all TV ▶



companies more willing to think about bringing their IP onto different media."

Crooks also observes that smart devices have massively expanded the BBC's potential audience. While the firm has previously dabbled in *Doctor Who* and *Top Gear* titles – IP that appeals to traditional gamers – the rise of mobile means there's a big enough market for the BBC's upcoming *Strictly Come Dancing* game, and potential for other brands such as *The Great British Bake-Off*. Likewise, Channel 4 has produced games based on *The Jump* and *Gogglebox*.

ITV, meanwhile, has actually taken games into account from the beginning on some of its shows – primarily the reinvented *Thunderbirds Are Go*. Two mobile games have already been released, with another due when series two arrives and a PlayStation VR project in the works.

"What's refreshing for me as a games guy is that I am now being asked to collaborate with the TV folks to help develop IPs from the ground up, two or more years from the first broadcast," says David Miller, VP for digital games at ITV Studios Global Entertainment. "We hope that by working in this way, we'll be able to bring a fully rounded experience to the audience, one where the boundaries between linear and interactive are blurred."

SERIAL HITS

Another factor that has attracted broadcasters is the games industry's many examples of how developers can tell stories episodically – just as TV showrunners do. While Telltale's *The Walking Dead* is based on the original graphic novels, it has provided a way for fans of the show to take part in the series' fiction, as has its *Game of Thrones* titles.

In fact, mobile and web developers are even able to update their game quickly to reflect the latest events from TV – *Game of Thrones: Ascent*, for example, rolls out new quests each week based on the latest HBO episode, while Crooks says it's entirely possible to update *Strictly Come Dancing* to include the outfits worn by the stars every weekend.

There are even examples of studios attempting to tell TV-like stories in their games. Trion Worlds is treating

updates to action MMO *Defiance* as new seasons now that the SyFy series has been cancelled, while Remedy's experiment blending gameplay and live-action in *Quantum Break* has been well received.

"Episodic content is an interesting prospect, and I think you'll see more of that happening," says Crooks. "Telltale is doing its new supershow format, where you have the crossover between the TV show itself and a game. That's something I'm very interested in investigating with BBC brands. We're also thinking about interactive narrative, which would lend itself to shows like *Sherlock* or *Luther*."

MacDonald adds: "It's not just the big budget guys like Remedy that can spend hundreds of man-months crafting these cinematic experiences – people like Sam Barlow and Mike Bithell put emphasis on narrative," he says. "It's not the mechanics that sell franchise-based games – those just facilitate the story."

THE PROPER CHANNELS

Working with broadcasters can save devs from one of the toughest challenges they face: discoverability. Crooks observes that not only will IP like *Top Gear* and *Doctor Who* help your game stand out, but the social media and marketing support broadcasters can offer will also assist with promotion.

But MacDonald warns that quality is still paramount: "A good brand is a way of making your game stand out, but it still has to be a good game. You could buy your way to the top of the charts but, if it's not a good enough game, you're not going to stay there."

Miller observes that such collaborations can also make life a lot easier for developers: "You have immediate access to a universe, a set of characters, a set of principles and values – and if the execution is animation – a wealth of assets. This can save months of work and reduce costs significantly."

Much of the talk from broadcasters so far has been about mobile, but that's not to say these firms are discounting consoles. The challenge, as MacDonald puts it, is the economics.

"Channel 4 has a lot of cool shows but some of them are only well known in the UK – things like *Hollyoaks*," he explains. "I can justify doing a mobile game, because for a reasonable budget I can do something that's good quality. To do something that stands up against what's already on console or in VR would require much bigger budgets, and when it's an IP that's not known outside the UK, I'm unlikely to see much of a chance to recoup that investment."

But, Crooks says, virtual reality is definitely something BBC Worldwide is considering – to an extent.

"On the cheaper end of the VR market, there are ready-made mobile devices in people's pockets that double in power every year or so," he says. "I'm not sure how easily VR will be taken up by the public at home, but in terms of events-based stuff and installations there will be a lot of stuff happening. Again, that's an area we're looking at."

PERFECT PROGRAMMING

BBC Worldwide and Channel 4 are actively seeking development partners, but both are being extremely careful with their choices. Developers need to show they care about the brand.

> **Finding the developer that has the right experience and passion is the key.**
> *Colin MacDonald, All 4 Games*

"If they're passionate about the show, they get what's important about it and they'll find a way to get that across in the game," says MacDonald. "If they're just treating it as a bit of work-for-hire, it's not going to be anything special or capture anything special about the IP.

"It also has to plays to the dev's strengths. If I had the James Bond license and I wanted to do a driving game, there's no point me approaching someone who makes amazing match-threes. Finding the developer that has the right experience and passion is the key."

Crooks adds the broadcasters have to be more cautious with certain brands than others, particularly if they don't fully own the IP – the BBC's hugely popular *Sherlock* being a prime example.

"It is a question of dealing with the IP properly," he says. "There are a number of stakeholders when you're dealing with an IP like *Sherlock*, so there's a lot to do when making sure the quality of the title you put out is high enough because ultimately it reflects on the property itself."

If developers want to impress broadcasters and establish themselves as viable partners, they need to put considerable time, effort and passion into their proposal.

"Ultimately, we want to see what the game idea is," says Crooks. "Coming to us with some sort of concept based around our IPs is the best way to approach things – especially if through that you can show how much you know about the brand, and show your skill in the platforms you're planning to use as well."

MacDonald concludes: "Don't just talk to the broadcasters in your home region – there are loads of broadcasters outside the UK as well, that developers should think about working with." ■

If you would like to find out more about working with either BBC Worldwide or All 4 Games, email **games.support@bbc.com** or **cmacdonald@channel4.co.uk**. Meanwhile, ITV's David Miller can be found via LinkedIn.

DISRUPTING THE CHANNEL

Disruptor Beam has already built a strong reputation for building titles based on popular TV franchises. The studio made its name with *Game of Thrones: Ascent*, developed in partnership with HBO, and has this year released *Star Trek Timelines*, which celebrates all five eras of the TV show.

CEO Jon Radoff offers developers the following advice: "The primary challenge with creating a game around a TV licence – or any licence really – is to keep your game content familiar to the fans, but also fresh.

"Fans want to feel 'at home' within your game, encountering content and stories that are familiar to them, while also experiencing something new and different.

"For us, it's integral that the team loves the licence and are fans themselves. Then it becomes easier to create content that other fans will enjoy.

"Having a great partner also helps. When you are working closely with the licensor and they are amenable to your team's creative pursuits while providing constructive feedback, the product benefits."

'WRITERS MAKE SURE THINGS **EXPLODE** WHEN THEY NEED TO'

Development often sacrifices narrative strength at the altar of technical achievement, leaving titles with clichéd plots and lifeless dialogue in favour of visual panache and mechanical complexity. Writer Steven-Elliot Altman tells **Matthew Jarvis** how studios can give games a story worth telling once again

Two things tend to happen when you ask someone to summarise the story of a game. They either struggle to recall any notable narrative beats at all, or offer a generalised "Well, you know, it's like every shooter story..."

That's not to say that gaming's finest yarns – from *Life is Strange*'s teenage melodrama to *Bloodborne*'s cryptic eldritch horror – can't hold their own against the worlds of cinema and literature, or that other mediums don't have their stinkers (looking at you, *Batman v Superman*). But games development's multitudinous nature at least appears to offer more potential for distraction from simply telling a gripping tale – no-one was crunching getting *To Kill a Mockingbird* to run at 60 frames per second.

"There's a lot of serendipity that has to occur before a writer gets brought on to any game, typically parachuted into a work-in-progress," reveals author Steven-Elliot Altman, who has written for games including *9Dragons Online*, *Pearl's Peril* and *Ancient Aliens*.

"You're sometimes met with cheer, but often shoved in to a room full of hostile developers muttering 'What do we need a writer for?' A key attraction for writers is when developers welcome story elements into their games."

> **Bring your writers in as early as you can – it pays off.**
> *Steven-Elliot Altman*

WRITERS BLOCKED

When games first emerged as an art form, writers were all but non-existent – 'They Meet' is the extent of the storytelling in 1981's *Ms Pac Man*.

"It's been a slow and steady ascent for the recognition of writers in games," Altman recalls. "Nowadays writers have legit job titles like 'Narrative Designer', as writers have started to get recognised for playing a part in a game's success or failure, on par with the evolution of how screen credits on feature films were first issued."

While writers have grown in appreciation among devs, Altman says that implementing a game's narrative still remains an afterthought for many studios.

"I'd say that the lead writer needs to be at least in the room during the initial game design banter," he states. "Bringing us in late when the gameplay is more or less solidified to wrap a shiny wrapper around it can work, but that's a waste of talent and opportunity in most cases.

"A writer can pick up a thread of a story and follow it. All of a sudden, it's clear that the time bomb you attached to the Ferris wheel should not explode at that crucial moment – we need to wait until the hero's girlfriend has gotten onto it, please. If the game developers made that explosion imminent, all the writer can do is try and justify it. That can come off as a let down to the player if it feels like a forced choice, simply because there are certain patterns of story that are ingrained in us. Good writers are sensitive to these patterns. Bad game designers are not. Most writers I know can't code, but we all know when a story has jumped the rails. So, please, bring your writers in as early as you can – it pays off."

Telltale accounts for multiple narrative outcomes from player decisions in titles such as *Game of Thrones*

NEVERENDING STORIES

Narrative design has never been more important in the world of games, as writers increasingly work to subvert linear convention and allow players to experience their own unique stories.

"Telltale's storytelling engine for *The Walking Dead* and *Game of Thrones* is pointing the way to how narrative will be used in the future," Altman suggests. "Those games have consequences. If a character dies because of a decision you make in chapter two, they are out of the narrative for good. The majority of games don't give the player any real agency – just varying degrees of the illusion they can choose their own path."

VR, Altman believes, is a key driver in the emergent nature of future game narratives – and, subsequently, their eventual succession of other mediums.

"The future of games rests in VR, which seems to promise players will have more agency than ever before," he predicts. "The more choices I have, the more responses my environment will need to have available for me. That suggests more writing, more writers per project, and suddenly watching a two-hour film where you have no agency will seem sort of boring. Once gamers experience real player agency, the beast will be unleashed." ■

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START-UP TOP TIPS

Thinking of opening your own studio? Developers that have already been through the journey, those that currently are and a range of industry experts share key insights into starting on your best foot

Make sure you clearly define your priorities – whether that's fame, fortune or passion – before you start your company

TOM HEGARTY, DIRECTOR, ROLL7

As a start-up resources and money are usually tight. Use these constraints to your advantage by focusing on the most important aspects of your game, which in our case has always been the core mechanic or 'hook'. It's important to differentiate between the necessities and the nice-to-haves.

DAVE RANYARD, VIRTUAL REALITY DEVELOPER

Talk to lots of people; a connection here or there can make a huge difference. Be flexible; if your dream is to create an amazing zoo manager game, and a surfing game comes up, don't dismiss it. Maybe you can make it an animal surfing game and suddenly you are halfway to your dream. Karma exists and is very real. Be nice to everyone and try to help them. At some point someone will reciprocate just when you need it most and you'll be very very happy.

JAIME CROSS, DIRECTOR AND CO-FOUNDER, TEAM JUNKFISH

Learn how to handle basic accounting and cashflow. I would recommend that start-ups have a decent handle on the admin side of things, especially for grants, payment processors, storefronts and the like. We've learned from our own start-up roots that someone will end up dealing with this as a major part of their role, and it will continue to grow as the business develops.

JOHN ROMERO, GAME DESIGNER, NIGHT WORK GAMES

You don't need any money. Just do it. You don't need to get Kickstarted. You don't need to get funding or anything if you're just making it. You want to start small? Just make it. Find friends that will commit to that time and the development cycle. If you're making the game and you have friends who are working on it at home or in the same spot and you guys can actually launch it, whatever happened during that dev cycle maybe created a company. You might actually find the people that will stick with you and go through this ordeal, and you've made a company just by making a game. It gets out and then you start from there. If you do it in your spare time, you don't owe anyone anything. You don't have someone owning a piece of your company or anything. You did it all yourself, so you own it all.

GARRY BARTER, CEO AND CO-FOUNDER, HERTZIAN

Engage with your local community. Find like-minded people near to you, use their experience. As a start-up in a remote location – Cornwall – attending a small monthly meet-up has meant that not only have we been able to tap into the knowledge and network of the

group but, when it came to the point where we wanted to build the team, we were able to access an established pool of talent.

GIULIANO CREMASCHI, CHIEF CREATIVE OFFICER, ARMADA INTERACTIVE

This is my third start-up studio, and hopefully it's the charm. It certainly is the best studio I've ever co-founded, and the reasons are simple. One: all key roles and competences are filled. Two: everyone has a concrete view of their tasks. And three: the scope of our first project is very clearly defined. If you lack any of these three key components, chances are that your studio will be in trouble at a certain point.

DUGAN JACKSON, DEVELOPER AND OWNER, TIKIPOD

Be realistic about what you can make. It can be hard to maintain enthusiasm/momentum over long projects. Log development time spent, it can help with future projects to both calculate if it was financially viable as a full time job and to see where some aspects of development may have gone out of control – so you can handle them better next time.

JASPAL SOHAL, FOUNDER AND DIRECTOR, PAPERJAM GAMES

For any start-up studio, it's inevitable that at some point you'll need to pitch your game to somebody else. In my view, you shouldn't even consider pitching your project until you have the following assets: a prototype build, concept art and a design document. That may sound like a lot of 'busy work', especially when you're excited to just starting talking to people about your project, but there's no better way to make a positive impression at a pitch than to have all the angles covered. A prototype build will demonstrate core game mechanics better than any verbal description, strong art concepts will help an audience visualise the final game and a design document – even a first revision – will help you really understand the game you're trying to pitch and, ultimately, make.

COLIN NORTHWAY, DESIGN, CODE, WRITING, NORTHWAY GAMES

My best tip is to make sure you are doing something original that you're passionate about. If you want to do something because a bunch of other people are doing it and making money then that thing is probably over. Find a meaningful twist or a new way of looking at the world that you're excited about and want to dedicate years of your life to.

> **Find your niche and focus everything you do on enhancing and promoting your unique selling points.**
> *David Jiménez, 2Awesome*

KEATON WHITE, MD AND PRODUCER, ABYSSAL ARTS

Be ready to roll with the punches. If you're underfunded, be prepared to take on contract work to keep yourself going; if you don't have the skillset to do something, contract someone who can – don't cheap out – and if those options don't work, be ready to learn and do it yourself.

TRACEY MCGARRIGAN, CEO, ANSIBLE PR AND COMMUNICATIONS

I work with lots of start-ups and the one big piece of advice I always tell them is secure your vanity URLs before you start. Even if you don't have a comms plan in place, and may never use some of those channels, owning them is really important and will be much cheaper in the long run – no imposters. Obviously, getting a comms plan in place from day one, and working out how you are going to tell your story along the way is the very important next step.

OLLY BENNETT, MD, CARDBOARD SWORD

Find someone or nominate someone from your team to be what we fondly call your 'Business Lizard'. This person will be your external producer, biz dev, PR interviewee, trade show ambassador, accountant, lawyer and company manager. All of these roles need to be covered by a confident and extroverted person. Hiring someone like that is prohibitively expensive, so get one early. If that person happens to be your lead coder, you no longer have a lead coder; if it's your designer, then you need a new designer. Any ideas that these roles can be handled by your current team, without someone dedicated to the role, will quickly be quenched the moment you find any form of success.

DAVID JIMÉNEZ, LEAD GAME DESIGNER, 2AWESOME STUDIO

The market is saturated, doing just another game – even if polished – will not make you stand out. You must do something different that makes people know your game is your game instantly just seeing a screenshot, an animation or whatever other piece of art you show. Find your niche and focus everything you do on enhancing and promoting your unique selling points.

DAN THOMAS, FOUNDER AND MD, MOOV2

Find a success measure beyond money. We all need to make a living, but don't subject yourself to a never-ending quest for 'more money'. Quantify your lifestyle desires, then decide what other factors 'success' consists of for you. For example: fame, speaking at conferences, working with idols and so on. ■

SPACE ARRANGERS

Every dev needs somewhere to work. Fortunately for start-ups unable to afford their own studio, there's a whole world of developer hubs and co-working spaces out there. **James Batchelor** finds out more

For many new developers, the oft-lauded image of 'bedroom coders' simply isn't practical. Most people require a distinct divide between home and work, but can't afford to rent or buy an office of their own.

Recognising the demand for accessible workspace among start-ups, several organisations and established developers have formed 'hubs' to support new games makers in their region. Unlike incubators, which are specifically set up to help grow new businesses within a certain timescale, these allow start-ups to develop at their own pace while still giving them access to resources they might need.

"Smaller companies like indies need support in many ways," explains Steven Huckle, who set up Essex-based The Games Hub. "Hubbing together creates an invaluable support network, offering a larger range of experience and advice that you don't get going it alone.

"This isn't just from a game-making point of view, but from a business and professional advice as well. It also helps build a sense of community that can aid and inspire. Our hub has already helped set up three companies, including Teaboy Games who are still with us. There are now six more teams in the studio and they are supported by the likes of Teaboy on top of the experts we bring in – it's becoming a kind of self-perpetuating mentorship."

> **Hubbing offers a range of experience and advice that you don't get from going it alone.**
> *Steven Huckle, The Games Hub*

Lindsay West, who runs Hull-based Platform Studios, adds: "Hubs are essential to grow the sector in our part of the country. They build community and give gaming economic gravity."

These co-working spaces have become increasingly popular in new studios, particularly in areas already thriving with start-ups. Jessica Stark, CEO and co-founder of Swedish hub SUP46 – which stands for Start Up People – receives 20 applications per month.

"Simply being part of a community where the people around you are working hard to build a scalable, successful business makes for an inspiring environment," she says. "We all need to make the efforts we can to ensure that the next generation of Spotifys, Klarnas and Mojangs get the best conditions possible to succeed."

Ben Ward, who runs Guildford-based Rocketdesk, adds that it helps new devs focus on meeting rising consumer

Jason Della Rocca (top), Jessica Stark (middle) and Helana Santos (above) say there are many benefits to working as part of a development hub, from saving money and building your network to simply being in an inspiring environment

expectations: "It's up to indies and start-ups to work smarter and harder to be successful. Working from home can be a lonely experience for devs, but spaces like ours can provide real-life interaction with real people and surround you with an environment that cultivates productivity."

Execution Labs' Jason Della Rocca, who also co-founded Montreal's GamePlay Space says his team calculated all the sales, funding, Kickstarter monies, publisher deals and so on generated by start-ups over the past year.

"We easily got past CAD$8m," he says. "So, there is a momentum and focus on having the business side be integral to the creative side, and start-ups are benefiting from that in a real way."

Perhaps the most obvious benefit of joining a hub is the money saved.

"It means that initial setup costs are significantly lower," says Helana Santos, who helps to run Arch Creatives in Leamington Spa. "Valuable time and resources may be focused on developing tech as opposed to setting up a studio.

"A start-up team will find desk space at much more affordable prices in a hub where costs are shared between multiple teams."

SUPPORT NETWORK

The hubs that have already been established are impressive, but their organisers believe there is still room to grow and offer start-ups even more support in future.

"It would be great for the hubs to be able to offer, or have access to, affordable or free versions of software from the likes of Autodesk and Adobe," suggests Huckle.

Many of the organisations we spoke to plan to collaborate with similar initiatives in order to better support their start-ups – something SUP46 already does to great success.

"Our collaborations with other hubs in places like San Francisco, Palo Alto, New York, London and Berlin means that our members have access to workspace and the network of these Friendship Hubs when needed," says Stark. "Our sponsors and partners also offer free legal and accounting clinics or offers specifically tailored for our members."

Della Rocca says that GamePlay Space plans not only to expand, but also to use the working area differently.

"We want to continue to add value, like building a sound studio and streaming room, and to provide more content and curriculum around business and entrepreneurship," he reveals. "We are not in the real estate business – we are in the business of helping independent studios succeed."

Santos adds: "We believe that hubs are a forerunner of the way that everyone will productively work in the future.

"It will be about super high quality entertainment, dynamic relationships with high productivity, whilst at the same time being adaptable to huge changes in the industry and the way the people that make games live their lives."

Bristol Games Hub creator Thomas Rawlings succinctly expresses why we can expect bigger and better co-working spaces to emerge in future: "Hubs are growing globally as an idea for one core reason: they work." ■

Find your hub

There are countless co-working spaces out there. Here's a selection to get your started:

AUSTRALIA

The Arcade, Melbourne
www.thearcade.melbourne

CANADA

Bento Miso, Toronto
www.bentomiso.com

GamePlay Space, Montreal
www.gameplayspace.com

DENMARK

Spilhuset, Copenhagen
www.spilhuset.com

GERMANY

Factory, Berlin
www.factoryberlin.com

More information on Berlin co-working spaces can be found at www.berlin.de/projektzukunft

NETHERLANDS

Dutch Game Garden, Utrecht
www.dutchgamegarden.nl

NORWAY

Work-Work, Trondheim
www.work-work.no

NEW ZEALAND

Level Up, Wellington
www.levelupwellington.co.nz

The Arcade, Auckland
info@nzgda.com

SWEDEN

Sup46, Stockholm
www.sup46.com

Sweden Game Arena, Skövde
www.swedengamearena.com

UNITED KINGDOM

Arch Creatives, Leamington Spa
www.archcreatives.com

Platform Studios, Hull
www.platformexpos.com

Playhubs, London
www.playhubs.com

Rocketdesk, Guildford
www.rocketdesk.co.uk

The Games Hub, Colchester
www.thegameshub.com

UNITED STATES

Boston Indie Game Collective
www.indiegamecollective.com

Game Assembly, New Hampshire
www.gameassembly.org

Game Forge, Philadelphia
www.phillygameforge.com

GameNest, San Francisco
www.thegamenest.com

Glitch City, Los Angeles
www.glitch.city

Indies Workshop, Seattle
www.indiesworkshop.com

WHAT'S IN A NAME?

In all the excitement of starting up your studio, there's one decision that requires some serious thought: your company name. **James Batchelor** asks devs how they came to christen their brand

Colossal Order

When setting up the company in 2009, choosing the name was one of the most difficult tasks. Our then-creative director was very much into architecture, and came up with Colossal Order. He had a very profound meaning for the name, with the pillars standing strong from ground up.

One thing I would advise: Google the name you're thinking of using. In Finland, Rape is a very common name (short for Raimo) and it's used in company names like Rape-Invest and Rape-Plan. However, going to international markets, those names might give a rather questionable image of the company. *Mariina Hallikainen*

Zero Dependency

We avoid relying on other frameworks and studios to make progress – hence Zero Dependency. *Andy Esser*

Utopian World of Sandwiches

During one conversation, sandwiches became our metaphor for the kind of games we wanted to make: simple, customisable titles with the players at the heart of our design process. We got really into this metaphor and how triple-A is more like a gourmet restaurant – we can still talk for hours about it. At the end of this chat, I said: "I don't want to go back to work, I want to carry on talking about our Utopian World of Sandwiches." *Sarah Woodrow*

Dumpling Design

Games are bite-sized, packed with tasty stuff and enjoyed with friends – just like dumplings.

Oh, okay then, you got me: it's named after my favourite food. *Travis Ryan*

Nine Games

I'm going to make nine games before I die. *Philip Bak*

Reventador Games

I want a Lamborghini Aventador. Why not remind myself of this unrealistic goal 100 times a day? *Thomas Webb*

I Fight Bears

It was already tattooed on my arm. *Nicoll Hunt*

Fluffy Knuckleduster

My business partner, Alex, has dreams that he's playing our games before we've made them, then writes the ideas down. The same thing happened with the logo and company name, and even though it was kind of ridiculous sounding, we just ran with it. *Nathan Hall*

No Code

We entered a game jam with no coder on our team – people told us that was stupid. We won awards that year and became No Code. *via Twitter*

Triangular Pixels

John Campbell, our technical director, had a domain for his personal blog for years. The URL had a pretty name, so we used it. And it works – it's clearly to do with computers, pixels are retro, and it's different from the norm. *Katie Goode*

Alex Rose Games

[Thumbfood founder] Simon Smith told me since I was more of an auter, I should sell on my name like Mike Bithell. Also, it means my IP is tied to my name. If a company bought my IP, they'd use a different name. Then it would be clear that my IP is no longer made by me. *Alex Rose*

Force of Habit

Nick and I compiled a huge spreadsheet of different words that we liked, and then split them into categories: colours, animals/beasts, objects, adjectives, miscellaneous, numbers, 'endings'. We then combined words from each category to make cool-sounding names: Slug Pocket, Bumblebit, Ox Head, Horse Face and so on. *Ashley Gwinnell*

Little Wolf Studio

This is going to sound really poncy, but basically I felt like a lone wolf. I knew what I wanted but I was away from the pack – the pack being the bigger 'normal' studios. And I'm pretty little. *Lilly Devon*

Fireproof Games

We wanted to find a meaningless name that came with no baggage, with no weight of 'awesome game studio' dragging us down.

But we figured the name is ultimately worthless until we make something notable. I mean, is Bungie a great name for a game studio? Not until they made *Halo* – now nobody cares what they are called. *Barry Meade*

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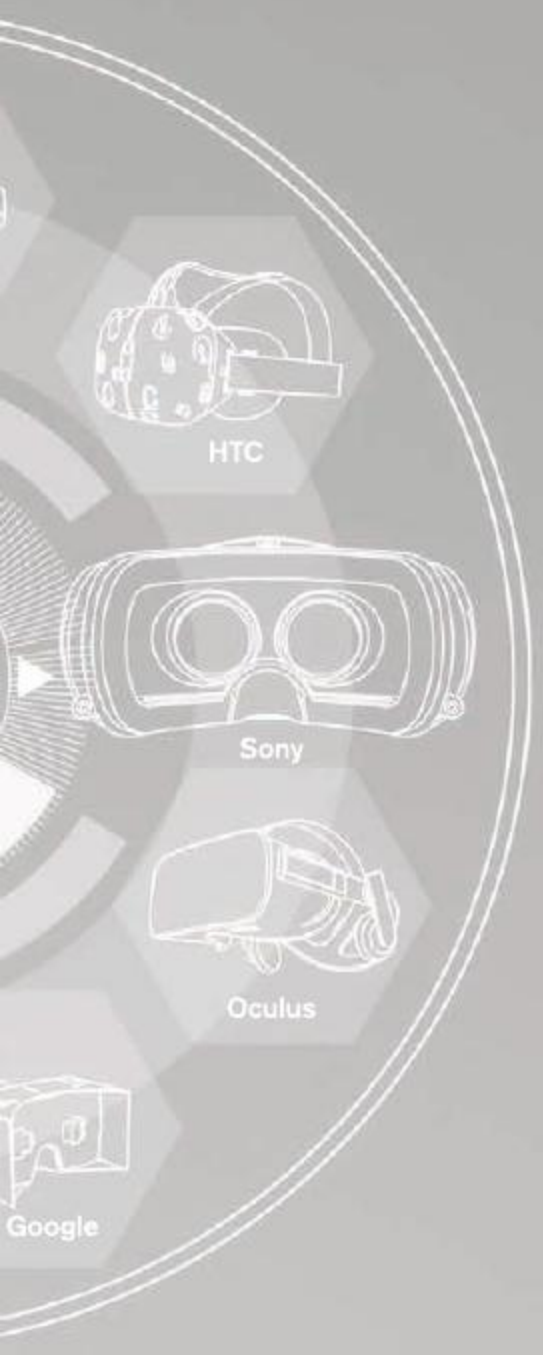

Stage by Stage Progress Comparison ☑

Pass based approach ensures opinions and biometrics can be monitored as features change to allow comparative user experience to aid in design meetings

Player Response Biometrics ☑

Biometric data capture to gauge player response during UX playtest sessions provided with video capture of gameplay

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Analysis of trends in gameplay and player response alongside qualitative questionnaires based on user feedback

Purpose Built Test Facility ☑

Dedicated VR Lab space designed to remove external influences and ensure technicians have the required level of focus

Open Communication ☑

Email/chat/phone and video communication with specialised POC

Multi-Platform Testing

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DOING IT LIVE

With Her Story sweeping awards shows, Quantum Break smashing sales records and VR heralding a revolutionary wave of interactive movies, games featuring full-motion video are back in a big way. **Matthew Jarvis** speaks to Sam Barlow, Nina Freeman and more about swapping polygons for people

Viva Seifert won multiple awards for her work in *Her Story*. Creator Sam Barlow says investing in actors you get along with is key to FMV success

A woman sits alone at a table. "You have no murder weapon," she says, before insisting, forcefully: "You have nothing." She tilts her head and smiles.

It could be a scene from a BBC drama or silver screen thriller, but instead it's a game: Sam Barlow's *Her Story*. What might throw you off is the fact that the woman isn't a computer-generated character – she's real-life actress Viva Seifert.

Such a scene is becoming more ubiquitous, as developers increasingly explore the use of full-motion video (FMV) in games.

This isn't limited to lo-fi indie efforts, either. Remedy's *Quantum Break* breaks up traditional third-shooter gameplay sections with full-length live-action TV episodes, with *X-Men*'s Shawn Ashmore, *Game of Thrones*' Aidan Gillen and *The Lord of the Rings*' Dominic Monaghan appearing both in person and as their virtual dopplegangers.

"Games have become more and more like movies over the years – *Heavy Rain* and Telltale's *The Walking Dead* series are all about strong, compelling narratives with interesting characters and they've found huge audiences," observes Allan Plenderleith, writer and director of Splendy Games' upcoming FMV title *The Bunker*. "There's something powerful about real performances from actual actors which resonate with audiences."

With feature-length cinematic releases now shot entirely on mobile phones, the ability for game creators to utilise live video has similarly opened up.

"I come from the triple-A studios, where high-end 3D characters can become very expensive to make," says Simon Tremblay, founder, producer and creative director at *Missing: An Interactive Thriller* studio Zandel Media. "You can get much higher production values and real emotions for your money with live-action.

"The biggest downside is you don't have any iteration – what you film is what you get. Good pre-production is key."

Dan Teasdale, co-founder of No Goblin, which included comedic live-action inserts in its arcade driving game *Roundabout*, reiterates the 'one and done' mentality of video.

"The biggest challenge for FMV is also its greatest strength – once you've filmed, there's only one revision of your source assets," he says. "If you decide in beta that you need to change how the story works, it means you have to book a whole new shoot and call actors in – which is kind of a rude shock if you're used to how iterative everything else in games is."

> **We're at a point where we can question the assumptions about what gameplay is important.**
> *Sam Barlow*

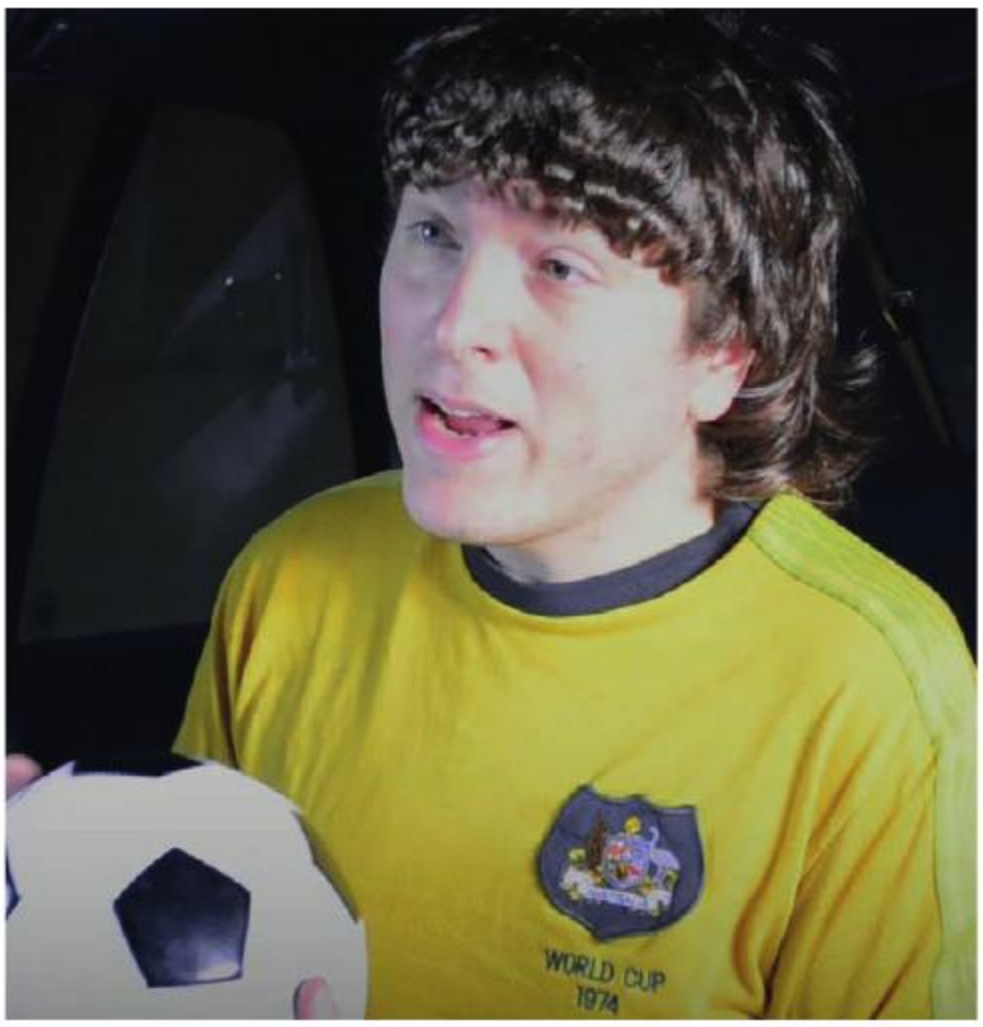
Game designer Nina Freeman chose to incorporate short live-action films into Star Maid Games' independent release *Cibele*, which recounts a semi-autobiographical sexual relationship.

"The FMV is there to ground the player and give them context as to who they are," she explains. "I didn't think animated bodies would have the same impact."

Barlow questions whether the evolution of the format could even redefine players' understanding of established mechanics.

"Our devices and internet connections are now powerful enough that we can throw video all over the shop, so it's natural that we start to re-appraise it as something that can be the core of an interactive experience," he says.

"We're finally at a point where we can question the assumptions about what gameplay is important; do we need to



Titles as diverse as *Missing* (*top*), *Quantum Break* (*bottom*) and *Roundabout* (*far left*) all utilise live-action segments

move an avatar around in a 3D space? There are some things that are hard to do in video, and if we don't need to do them the things that video does enable become that much more attractive."

THE REAL DEAL

While FMV may seem like a shortcut to the holy grail of graphical achievements – realism – the format presents its own unique challenges.

"Modern game engines aren't necessarily tooled up for handling video," Barlow highlights. "That continues to be problematic as I try and hit up more platforms. Unity is the most useful engine out there for independent developers, but its support of video is not robust and varies from platform to platform."

Freeman also experienced difficulty when selecting a foundation on which to build *Cibele*'s video elements.

"There's definitely a constraint within the technology for using films," she says. "We had to use Flash, which isn't great – but it supports video, so we had to use it."

Nina Freeman portrayed a semi-fictional version of herself in *Cibele*

Outside of tech troubles, Plenderleith notes that transitioning to a new medium can itself be a hurdle.

"The biggest challenge was planning the live-action production based on a non-linear story, and explaining that narrative to the crew," he says. "Our team are all highly experienced filmmakers but had little to no experience in making games – everyone was doing something they had never done before."

> **The interactivity has to complement the narrative.**
> *Allan Plenderleith, Splendy*

Melding the worlds of film and games together can be a tough task in terms of gameplay mechanics and flow, too, as Tremblay points out.

"Do storyboards with placeholder VO until the game feels good," he advises. "It's a tricky process. If the story sucks, then the game is just a sequence of puzzles, and if the gameplay sucks, then the puzzles are in the way of the story. It's a balancing act."

TOOLS FOR THE TALE

With interest in FMV riding high, there are sure to be many devs considering the format – and it's never been easier.

"Now, there are lots of accessible game making tools, so people have a little more flexibility in what they want to make," praises Freeman. "With that, you start to see more types of games being made and thus more games with strong stories and writing."

Yet, Plenderleith offers a warning to creators to make sure the format fits.

"There has to be a reason why your story is a live-action game," he opines. "The interactivity has to complement the narrative and draw you further into the story."

Barlow celebrates the marriage of live-action video and gameplay as a step that could finally bring virtual worlds in line with their cinematic cousins.

"The availability of devices, the way technology is becoming integrated in all of our entertainment media – it's making a difference," he observes. "But we still need to do our bit. Throw out the baggage from decades of games and invent new mechanics or focus on mechanics that provide a condensed, rich experience.

"As an industry we need to give more money to storytellers and allow them to genuinely create, rather than just polish dialogue. We need to empower and encourage storytellers to embrace interactivity. Story should be the genesis of a game idea and the core of the experience. There are other things that need more shaking up – like expectations around game price and length. But we'll get there." ■

ACT THE PART

You've got the lights, the cameras – wait, what about the actors? Unless you fancy yourself a virtual Laurence Olivier, you'll need to find someone up for the task.

"Actors want a good story and to play a well developed character," Tremblay advises. "If you don't feel confident enough to direct an actor, you should rely on a director. Otherwise, the scene will suck and you'll be disappointed."

For *Her Story*, Barlow worked with Viva Seifert, who was awarded the 2015 Game Award for her portrayal of Hannah.

"The relationship is important," he says. "You need someone you can work well with. So invest in casting. If you're making an FMV game there's very few things worth spending the money on more than the cast. They're your game!"

But professional actors aren't always essential.

"We asked our friends if they'd like to be in *Roundabout* and jammed them in the back seat," Teasdale recalls. "Kate Welch, a fellow game developer, delivered a performance that easily outshone anything I've seen in triple-A performance capture."

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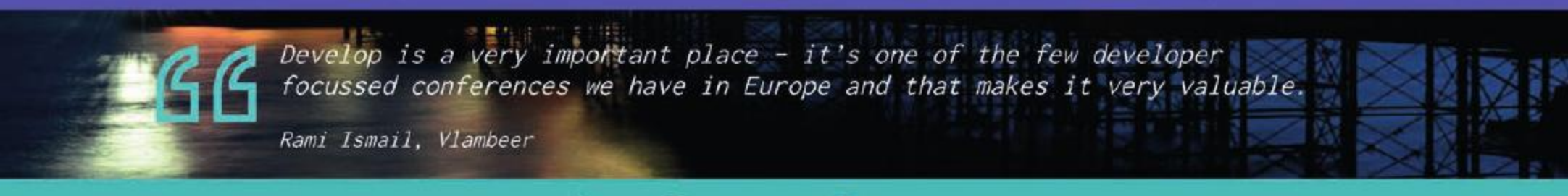
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'WHEN THE INDUSTRY YOU'RE IN TAKES A HIT, IT'S IMPORTANT TO COME TOGETHER'

Evolution and Lionhead's collapses have shaken the UK sector, but also led major studios to offer help

These past few months have unfortunately seen the end of some of the UK's most beloved studios. In March, Microsoft announced the closure of *Fable* developer Lionhead. Then, it was Sony's turn to announce that it was closing *Driveclub* creator Evolution, which has since been rescued by fellow racing specialist Codemasters.

If these collapses have weakened the UK games market, they've also had one 'positive' effect: highlighting the solidarity within the industry.

Indeed, following these two announcements, multiple studios reached out to help laid-off staff.

"When the industry you're in takes a hit like this, it's important to come together," says Craig Pearn, talent acquisition manager at Ubisoft Reflections. "It's vital to show everyone that the UK games industry is still strong."

Reflections held a meet-and-greet for Lionhead staff following the studio's closure. PlayStation held a similar event just a few days after the news was broken.

Pearn adds: "It was great to meet the developers from Lionhead and we have been talking with a large number of them since the event in Guildford. We have many of the developers at different stages of the recruitment process, so we are hopeful of making some hires soon."

Codemasters made more of a sweeping move when it picked up nearly all of Evolution's laid-off staff.

"We'd been looking for a strong development team to boost our portfolio of games for a while," VP of publishing Jonathan Bunney explains. "When we met it was very clear that we have more in common than just racing.

"We're all in this together, and we understand that peaks and troughs happen in the industry. By approaching affected studios directly, we can make the process of finding alternative employment easier, rather than using the traditional methods of job searching."

> **By approaching affected studios directly, we can make the process of finding alternative employment easier.**
> *Jonathan Bunney, Codemasters*

Bunney isn't concerned about the long-term consequences of the studios' closures: "The UK ecosystem will continue to be strong as those impacted will inevitably join other studios that are growing – or start their own companies to become the next wave of leading developers."

But the UK industry is not the only one to suffer from closures or redundancies. San Francisco-based JuiceBox and Gumi's Vancouver offices both closed mid-April, while Gameloft shuttered its New Zealand outlet in January. This led British dev Climax Studios to open a new office in Auckland, staffed by developers let go by Gameloft (*pictured*).

CEO Simon Gardner explains: "We were already in discussions with [lead programmer] Andy Wilton when the closure was announced and, as we were already looking to hire coders, I just emailed him and said: 'How many coders could you get if we set up a small studio?' It became clear we had a real opportunity." ■

MOVERS AND SHAKERS

The latest high-profile hires and promotions

POLE TO WIN

Industry veteran **ADAM ROBERTS** is returning to the games industry after a four-year break.

The former Vivendi, D3P and THQ exec has taken on the role of European head of sales at QA and localisation firm Pole To Win.

Roberts began his career in 1991 at Empire Interactive and left the industry in 2012.

"Adam's in-depth experience will be invaluable in helping PTW grow," said SVP of sales and marketing Becky Walker.

OBSIDIAN

LEONARD BOYARSKY has departed Blizzard after 10 years working as senior world designer to join Obsidian Entertainment.

He is thus reunited with Timothy Cain, with whom he founded Troika Games back in 1998.

Boyarsky is best known for his work on the original *Fallout* as art director.

BUNGIE

Destiny's story creative lead **CJ COWAN** has left Bungie after 13 years.

He joined the firm in 2003 as cinematic designer on *Halo 2*, before becoming director of cinematics in 2005. Since 2009, he had been working exclusively on *Destiny*.

Cowan declined to comment on his next project; his LinkedIn describes him as a "storyteller for hire".

BOSS ALIEN

Former Zynga exec **CHRIS PLUMMER** is Boss Alien's new studio head.

He replaces Jason Avent, who in mid-April departed the company he co-founded.

Plummer started his career in 1995 at EA, where he worked for 13 years. He joined Boss Alien parent Zynga in 2014.

PRODUCER OF THE MONTH

This month we speak to **Pete Young**, producer of Reflections' Grow Home

Tell us about your career.

My career on paper makes for pretty simple reading: I spent a long time at university, then joined Reflections in 1999 and never looked back.

Beneath the surface, though, it's been quite a varied journey. I studied electronics through to a PhD in computer science at university, then progressed from tools programming on *Stuntman* to team management, before hopping to the online team for *Driver: San Francisco* and finishing it as multiplayer director.

The icing on the cake has been bringing *Grow Home* to life as producer.

Describe a typical day for you.

Being a producer there is no typical day – and that's part of the fun.

We've intentionally kept a tiny team as we strongly believe constraint breeds creativity. As well as the typical responsibilities of a producer, with *Grow Home* it meant me also having to help by getting my hands dirty anywhere I could.

As always though, 90 per cent of the job is trying to smooth the way and let the team work their magic.

What are the biggest challenges on your current project?

The start of a project is always the most exciting and most challenging.

It's always tough to align on a direction and decide what game to make when the possibilities are wide open.

It's a bumpy process with a lot of voices and, as producer, you need to try and make sense of it all and make sure the team align and can move forward.

What's the best advice you've ever been given?

It sounds pretty simple, but the best advice I've had is still what my father told me I was a kid: love what you do.

I've since learned that it doesn't matter what it is you're working on, there's always a part of it you can make your own, throw all of your energy into and be proud of what you achieve.

What advice would you give to anyone looking to forge a career as a producer?

The best advice I could give is to trust your team and be comfortable with that trust. Production isn't about you, it's all about getting the best from your team and creating the space for them to shine. ■

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CV BAY: 'ADVICE FOR ANY ASPIRING DEVELOPER IS THE SAME: STUDY'

Marie Dealessandri catches up with CV Bay business development director Harry Vlahakis to ask about the firm's work in games recruitment over the last decade, helping both aspiring devs and established studios

In the jungle of the UK dev industry, studios sometimes need a little help to seek out high-end developers and dashing artists.

On the other hand, professionals looking for new job opportunities can always benefit from the advice of a recruitment firm, even after spending years in the industry.

CV Bay aims to lend a hand to both ends of the recruitment hunt.

"We are a Birmingham-based recruitment company that specialises in the gaming and IT market across Europe," new business development director Harry Vlahakis explains.

"We were formed in 2006 and our aim has always been to build long term, mature and trusting relationships with our customers, whether they be clients or candidates."

While the company is relatively young, the firm's three directors have more than 40 years of combined IT recruitment experience.

CV Bay also benefits from the involvement of more than ten recruitment specialists spread across its three UK offices in Birmingham, London and Manchester.

Skills in free-to-play, cloud and VR development are particularly high in demand at the moment, says CV Bay's Harry Vlahakis

STAY TRUE

Embellishing the truth in your covering letter and CV is a well-worn mistake when applying to a prospective job.

Vlahakis reiterates the point that being forthright is key when it comes to recruitment, and adds that the adage applies when it comes to working with support firms, too.

"Honesty really is at the core of our business," he says.

"We are dealing with people's lives when helping them get a new job, so it goes without saying that they need to be able to rely on us and know that the information we are providing is accurate."

However, he continues, those looking to hire must be equally frank.

"It's the same for clients, they need to be able to rely on us, so they can make the most well-informed decision," he states.

"Morally, it's just how it should be and how business should operate."

Vlahakis feels that transparency on all ends ultimately produces the best results, for jobseekers, studios and recruitment specialists alike.

"There are some very well established games recruiters in the market who are doing a great job," he observes. "But we have been allowed a foothold in the market and are winning new clients all the time.

"We asked some of our clients why they use us and were told that they like the fact that we understand their requirements and only send suitably skilled candidates who are worthy of interview."

MORE TO LEARN

CV Bay works with both large and small studios – and they all get the same level of service.

So what has the company learnt about the current state of hiring interest in the games industry?

"We have a number of roles from development to art within console, mobile and gambling games studios," Vlahakis says. "We are always looking for experienced C++ programmers, from gameplay to networking"

For those looking to break into the sector, Vlahakis admits that working hard at improving your craft may be the simplest tip – but it's also the most effective.

"The advice for any aspiring developer is the same: study," he states. "Then build a great portfolio to showcase your talent, maybe take part in some games jams and then study some more.

"The gaming community only hires the best, and is attracting talent from across the globe, so to make it you are going to have to be at the top of your game."

Despite this, there are specific areas of development that are hot in demand among growing studios, and which are forcing budding candidates to expand their abilities.

"The shift in the market towards cloud gaming and free-to-play games is requiring us to search for candidates with a different skillset," Vlahakis reveals.

"We are looking for a lot more candidates with experience working with cloud platforms such as Azure or Amazon AWS, and have also seen an increase in demand for candidates with experience in real time data.

"There is still a huge skills shortage in the sector and, as games continue to innovate and technology advances, we are seeing this is further limiting the pool of suitable candidates.

"Our advice would be to keep expanding and developing your skills to try and keep ahead of market trends – you will be extremely sought after."

Among the market trends set to redefine the games recruitment market in coming months, Vlahakis predicts that virtual reality will be the most revolutionary.

"It's all about VR," he says. "Excitement is building; it's been talked about for a while but as the development kits have been released, it's only a matter of time before some games come onto the market." ■

> **The gaming community only hires the best, and is attracting talent from across the globe, so to make it you are going to have to be at the top of your game.**
> *Harry Vlahakis, CV Bay*

GET THAT JOB

This month: Chief Design Officer with Guerilla Tea co-founder Charlie Czerkawski

What is your job role?
My role is a blend between game design, aspects of production, business development and marketing.

How would someone come to be in your position?
If you're passionate about games from a design perspective and understanding what makes them tick, and you are someone with a broad range of interests, then you'll thoroughly enjoy this role. In particular, if you are also entrepreneurial and can see yourself starting and running a company.

It's likely a role that you'll find yourself in if you stay within smaller, independent companies, or potentially start your own studio.

What qualifications do you need?
A strong undergraduate degree is a very good starting point: maths, computer science, physics, history – to name a few.

You may need to consider doing a post-graduate degree afterwards, potentially something more tailored towards the games industry.

From here, it's invaluable to get some experience in video games QA, and then try to move into design.

Game design is difficult to quantify and the role tends to change from studio to studio. Be prepared to wear many different hats, so to speak.

If you were interviewing someone, what do you look for?
I'd look for someone who has prior experience in QA and design, but more importantly is an excellent fit for the team in terms of personality and general attitude.

Verbal and written communication is very important for the role.

> **Game design is difficult to quantify, and the role tends to change from studio to studio. Be prepared to wear many different hats.**
> *Charlie Czerkawski*

What opportunities are there for career progression?
There are a lot of different directions you can go. Moving more towards business development and running larger projects is one particular avenue.

There are a lot of opportunities to work in new ways closely with other disciplines of game development such as art or code.

Why choose to follow a career in your field?
Game design is a fascinating discipline. Every day is interesting and a complete mixed bag in terms of tasks and new things to learn.

I find that every aspect of life – whether it be travel, hobbies, past experiences or something else – all play a major role in game design, and this makes it one of the most fulfilling jobs. ■

SKILLS AND TRAINING

This month: Head of games **Simon Fenton** discusses the games opportunities at Escape Studios, with courses focused on art, effects and animation

Escape Studios is Pearson College's visual effects academy, established in 2002 in London.

Its main focus concerning games is art, says Simon Fenton, head of games and leader of the games art courses.

"We don't teach coding, games design or skills that are not part of a games artist's skillset – we don't want to water down our focus with subjects that artists will not be called upon to use," he explains.

Escape currently offers a BA and MA in the Art of Video Games and short courses in Video Games Art Production (12 weeks) and Advanced Video Games Art and Effects Production (18 weeks).

"We have a huge focus on art direction and the importance of research, as well as covering the technical aspects of development that an artist needs to know, such as engines, real-time rendering, materials and lighting, but always in the context of the knowledge needed to be a production-ready game artist," says Fenton.

> **We don't water down our focus with subjects that artists will not be called upon to use.**
> *Simon Fenton, Escape Studios*

Overview: Escape Studios offers undergraduate and postgraduate courses in visual effects, games art and animation, as well as full-time, part-time and online short courses in the same fields.

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Rockley Road,
London,
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Students also have access to a wide range of technology and tools.

"For modelling we use Maya, Zbrush and Mudbox whilst texturing is covered with Ndo, Xnormal, Substance Painter and, of course, Photoshop," details Fenton. "We teach mobile, console and PC level game art and, as such, our engines are Unity 5 for mobile and Unreal Engine 4 for console and PC."

Limited places are still available for a September 2016 entry at Escape. ■

RECRUITER **HOT** SEAT

Internal recruiter **Rebecca Askham** talks about the numerous hires planned by Sumo Digital over the next 12 months and how candidates can impress her to land their dream job

What differentiates your studio from other developers?

The variety of quality triple-A games that Sumo develops and our reputation for versatility definitely makes us different.

Partnering with publishers such as Microsoft, Sony, Disney and Sega on various IPs means that we are always working on a number of diverse projects.

We attract talent from all over the world and the opportunity to work on these high profile games is often a very important factor. Increasingly important to prospective employees is the fact that Sumo is stable, secure and continuing to grow responsibly under a strong leadership team. The job security of our staff is our highest priority and always will be.

How many staff are you looking to take on?

We have had a fantastic response to our new studio in Nottingham and are recruiting across all disciplines, with 35 to 50 hires planned over the next 12 months. Our Sheffield studio is also actively recruiting and is projected to reach 260 staff – it's currently at 230 – in the same 12-month timeframe.

What perks are available to working at your studio?

We offer generous holidays, flexible working, group income protection and group life assurance cover, plus access to a group personal pension scheme and employee assistance programme.

In addition, we also offer childcare vouchers and a cycle to work scheme, plus a free on-site gym, money on your birthday, a monthly alternative travel prize draw, free drinks and fresh fruit. Not to mention, a huge Christmas party and the legendary summer 'Sumo Big Day Out', which is open to all staff and their families every August.

How can applicants improve their chances and stand out?

For junior candidates we're always looking for those that have gone that 'extra mile' and of course have a real passion for games, which is a point that cannot be overstated enough.

It should also go without saying that a portfolio, show reel or website showcasing their work is essential; we want to see what they enjoy and are good at. If they're not proud of a piece of work, they should leave it out – it will just dilute the good work they have.

When it comes to more experienced candidates, we tend to look for people that have a strong track record working on triple-A console games and a CV that clearly explains their contributions to the games they've worked on.

Clarifying which of your roles were permanent as opposed to contract work can answer questions about brief past employment, says Sumo's Askham

> **If applicants are not proud of a piece of work, they should leave it out – it will just dilute the good work they have.**
> *Rebecca Askham, Sumo Digital*

A clear career timeline and clarification on permanent roles versus contract work answers any questions that could arise if a candidate has moved roles frequently.

What advice do you have if they get through to interview?

Be comfortable, know your stuff, and relax – we want you to do well and enjoy the interview.

We don't administer tests, but you will be expected to talk in depth about and explain everything on your CV and in your portfolio. You will also need to be able to analyse and discuss your individual contributions to any projects that you have worked on in detail.

As well as skills and talent, we need to know that you can be part of a team, so showing us your personality and style of working is very important, too.

If you have recruited internationally, what is the process like?

We do lots of international recruitment so are well practiced. We recruit from the UK, Europe and all over the world and have a sponsorship licence enabling us to sponsor non-EU candidates.

Visa processing times vary depending on the country of application but our specialist immigration lawyers take care of the process making it generally smooth and uncomplicated for the candidate.

We understand how much of an upheaval moving overseas can be so offer as much help as we can with relocations and practical advice too. ■

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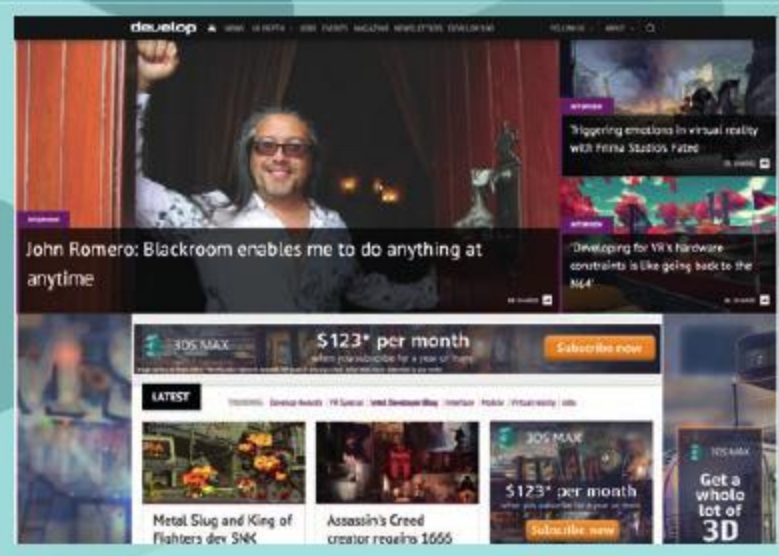
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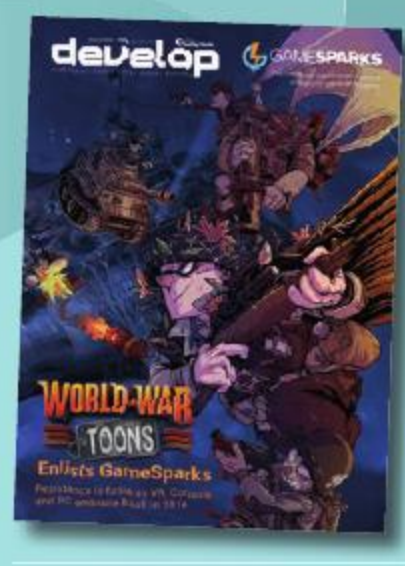

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A CRASH COURSE IN CAR PHYSICS

Stainless Games' Carmageddon returns next month with a new console title that promises the most impressive vehicular destruction since the car combat series debuted almost two decades ago. **James Batchelor** straps in to find out how the game's steel-shredding effects were accomplished

In 1997, UK developer Stainless Games released vehicular combat title *Carmageddon*.

Known for its headline-grabbing controversial content that allowed players to mow down unsuspecting pedestrians – complete with pixelated gore – the title was equally famous within development circles for being one of the earliest to introduce physics and real-time damage to 3D games.

Such features are now commonplace, but Stainless remains determined to push the boundaries of in-game destruction even further with upcoming console revival *Carmageddon: Max Damage*. Following the success of the crowdfunded *Carmageddon: Reincarnation* on PC last year, this new title challenged the team to code a completely new generation of car physics.

Patrick Buckland, programmer and co-founder of Stainless Games, reveals the studio has held true to its tradition of using in-house core technology – a practice that dates back to 1994 – and relished the "big, juicy technical challenge" of taking things forward with *Max Damage*.

> **We engineered a bespoke tool, which simulates the buckling of metal, that even works on console when six cars are being smashed up at once.**
> *Patrick Buckland, Stainless*

"As the programmer who developed the original car damage system, I took on the task of both specifying and developing a state-of-the-art car damage system that would make the most of modern multi-core hardware in current platforms," he tells *Develop*.

"The techniques used in the original damage system were written for a prototype in 1994, and so actually predate *Carmageddon*. These were obviously woefully inappropriate for a

Carmageddon: Max Damage's vehicles are virtually constructed piece-by-piece in the same manner as their real-life counterparts

top-flight game in 2016. So right at the start of the project we took a step back to spend time specifying the 'ideal' car damage system.

"A lot of reference material was taken from actual car wrecks, with the target of replicating everything that happens in real-life. Looking back at that specification document, we ended up with at least 95 per cent of what was a very ambitious wishlist, all now present and functional in the game."

Replicating real car damage meant the team had to design the vehicles as realistically as possible. Car models were built up from individual pieces in a manner similar to the construction of actual cars, and then virtually welded together like a monocoque.

"By mimicking this basic structure, we could better simulate what happens when the car was subject to impact," Buckland explains.

BUILD IT UP, BREAK IT DOWN

Cloth simulation and physics-based destruction has come a long way since 1997 so, to begin with, Buckland researched off-the-shelf tools and solutions that might benefit *Max Damage*. In the end, the programmer decided the panel damage algorithm needed to be written from scratch.

"None of the other tools met our standards, so we engineered a bespoke one, which really simulates the buckling of metal – but does so fast enough to work on a console when six cars are being smashed up all at once," he says.

> **By adhering to the laws of physics, we lock into the player's subconscious and let them 'feel' the impacts at an almost primeval level.**
> *Patrick Buckland, Stainless Games*

"During the crashes, as well as general panel damage and pieces coming off, our system had to be able to cope with massive impacts to a car. For example, a car might be sandwiched between another vehicle and the environment, where the desired result would be total car concertinaing, twisting, buckling or even splitting."

Concertinaing is when a car is squashed-up in a single axis – for example, if it is rammed against a wall. Buckling, meanwhile, occurs when the car is 'wrapped' around an axis – such as when it hits a lamppost or is 'T-boned' by another car. If the car has sufficient momentum, parts of it carry on moving after the collision, causing it to wrap around the object that it hit.

Twisting is rarer and somewhat trickier to implement. When one part of a vehicle can't move because it's trapped against something solid, forces are then applied to points a distance from the trapped part so that it will twist independently.

It's also possible for the vehicle's inertia to cause twisting if the impact is heavy enough. For example, if a car is halfway through a slow barrel roll and something smashes into its front corner from underneath, the front of the car may twist relative to the rear. It's a difficult effect to mimic, but Buckland and his team found a solution.

"Our code will allow any axis to twist, just in case the forces dictate it," he explains. "Twisting is also used when the cars are damaged by mines and other explosions, as it adds an additional 'totally messed-up' look to the car afterwards.

"The twisting itself had to be fed into the crushing code, so it is in fact just a layer on top, and things like the maintenance of surface area – otherwise tearing of welds or panels – must be adhered to.

"These four instances only occur under exceptional circumstances, not just because they require enormous forces to happen anyway, but also because this type of damage can result in a car being undriveable. Conversely though, a slight amount of total twisting or buckling will really help with visual damage transmission through the vehicle on heavy impacts."

BENDING THE RULES

The effects of twisting, buckling and concertinaing are impressive, but they depend on vehicles being in the right situation and under the right pressure. This required a thorough understanding of the physics behind vehicle collisions.

Max Damage's cars aren't just destroyed – scrapes can be reversed by repairing in-game

"The physics has to make sense," he says. "It was really important to us that these instances would be real 'wow' moments for the player. We also tried to continue the original specification of *Carmageddon*, which was that by strictly adhering to the laws of physics at all times, we lock into the player's subconscious, which in turn lets them 'feel' the impacts at an almost primeval level.

"For the sake of gameplay, we still allow the car to be driven in a state that would be impossible in real life.

Stretching the laws of physics is *Max Damage*'s splitting feature – where vehicles can be ripped in half, yet continue to race around the track.

"When cars split, we divide the model across an arbitrary plane," Buckland explains. "Anything that crosses this plane that can smash or detach must then do so. All crushable parts are then divided in two across the plane such that a vertex shader turns off vertices that would reside on the 'wrong' side.

"This entire process is then applied in reverse to a usually hidden split-half of the car, as well as copying over any existing damage before the split occurred. The split-half is then enabled and acts just like a normal car. The code will pick the most sensible half to remain as the main car, in case it might still be driveable."

IF IT AIN'T BROKE

Not content with tearing its virtual cars to pieces, Stainless also went to great lengths to put them back together – while players are still driving them.

"Repairing your damage has always been a key part of *Carmageddon*, because it's essential that you're encouraged to smash your car up," says Buckland. "Crumpling is repaired frame-by-frame in order to make it look progressive. Broken off parts come flying back to your car as physics objects, and can even kill pedestrians on their way. First, we prioritise essential parts such as wheels and your engine, which fly back to you on the very first tap of repair.

"Repairing splitting is really complex, because either or both halves may have received subsequent damage and no longer fit together. The code handles this by pulling the secondary half back to you and then morphing the join together."

Stainless Games and Sold Out are bringing *Carmageddon: Max Damage* to PS4 and Xbox One on June 3rd. For Buckland, it represents not the end of this coding challenge – but another milestone in the journey he started back in the mid-'90s.

"The work on *Carmageddon*'s damage systems over the course of the series' near 20-year existence has been to keep the game at the forefront of this particular field of games tech, and I'm proud of it – as I am of the equally vital work everyone else on the team has done to bring it back," he says.

"I look forward to continuing to work on improving and evolving the systems in years to come, as we continue beyond *Max Damage* and move on to the next chapter in the brand's development." ■

16 FREE DEV TOOLS YO

Coding your game is only one step on the long journey to release – and just part of the final cost. In order to help trim down your budget, **Develop** presents some of the (literally) priceless tools, from editing audio and assets to capturing press assets, that you may not have considered using

Skype

Suitable for: Video conferencing
Web: skype.com

Available for Mac, Linux and mobile – not just Windows – Microsoft's video chatting software can let devs communicate with free HD group calls when working remotely. It's also useful for press interviews.

Stack Overflow

Suitable for: Problem-solving
Web: stackoverflow.com

Like Google specifically for devs, Stack Overflow is a free community that encourages game makers to help each other answer technical questions. It's also a useful place to keep up on the latest job vacancies.

Audacity

Suitable for: Editing audio
Web: audacityteam.org

Boasting a number of features for recording and editing audio, such as contrast analysis and the ability to export in a range of formats, this open-source software is ideal for devs looking to tweak their game's soundscape.

BizSpark

Suitable for: A quick start
Web: microsoft.com/bizspark

Start-ups can use BizSpark to access Microsoft dev tools and software, including Office, Windows and Azure, for free for three years.

BitBucket

Suitable for: Tracking code
Web: bitbucket.org

Free for up for five users, BitBucket is a collaborative Git solution allowing devs to review code, control permissions and work together in a desktop client. It features unified diff views, JIRA integration and can show the health of build code with a simple pass or fail icon. It also supports third-party integrations.

Unity

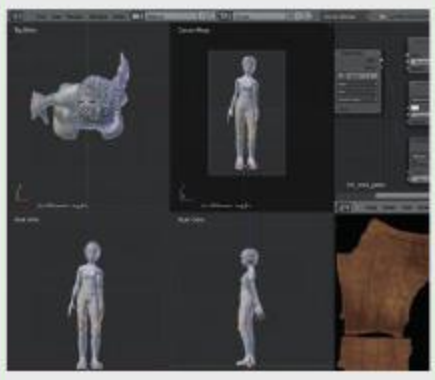
Suitable for: Various
Web: unity3d.com

You no doubt know that Unity is free, but it's worth remembering that the engine also includes free access to analytics, performance tools and multiplayer networking.

Stencyl

Suitable for: Coding (without the code)
Web: stencyl.com

Stencyl's toolset uses an accessible drag-and-drop interface to avoid the need for coding game logic when making mobile and browser games.



Blender

Suitable for: Art creation
Web: blender.org

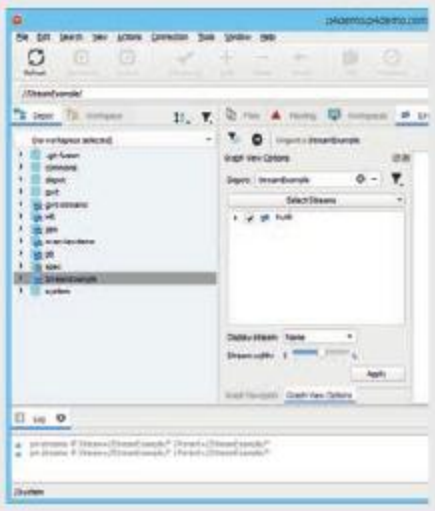
Freely supporting the 3D pipeline from modelling and animation to rendering and compositing, Blender can be further customised using its API for Python scripting. Based on OpenGL, the 3D creation suite includes photorealistic rendering, integrated sculpting and a fully-featured game engine.

U MIGHT NOT KNOW

OBS

Suitable for: Capturing video
Web: obsproject.com

OBS captures game footage directly from the GPU to maintain performance when streaming or exporting to a video file. Devs can go live straight to Twitch, YouTube, DailyMotion and more, or save a MP4 or FLV file to use as press assets or edit into a trailer. The Studio software includes further features and an improved API.



Perforce

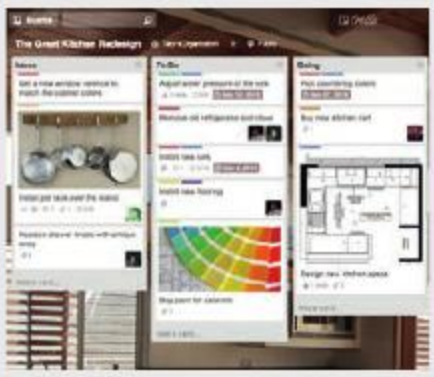
Suitable for: Version control
Web: perforce.com

Acting as a one-stop-shop for devs, Perforce's Helix collaboration platform includes a versioning engine, Git ecosystem, review application, analytics tools and threat detection service. It's free for teams of up to 20.

GIMP

Suitable for: Image editing
Web: gimp.org

As well as operating like a free PhotoShop with the ability to edit and create artwork, GIMP's framework also supports scripted language manipulation for C, C++, Perl, Python, Scheme and more.



Trello

Suitable for: Project management
Web: trello.com

Acting like a virtual sticky note board, Trello can make big projects easier to track and organise by colour-coding important tasks, letting devs drag-and-drop to rearrange cards and see updates in real-time. Checklists, uploaded files and due dates can also be utilised to make sure your team stays on top of everything that needs doing.

Unreal Engine

Suitable for: Various
Web: unrealengine.com

Though you'll have heard of the engine, Unreal has a whole host of free features you may have missed. For example, Simulate Mode allows devs to run game logic and inspect AI in the editor viewport, while the Matinee toolset can be used to direct and produce in-game cutscenes and movies in a video editor-like UI.

Slack

Suitable for: Instant messaging
Web: slack.com

Slack splits text conversations into multi-user channels based on projects, topics and teams. Various tools integrate into the software to provide instant notification when something needs checking or fixing. Up to 10,000 messages and attached files can be archived and searched in the free release.

Sublime/Notepad++

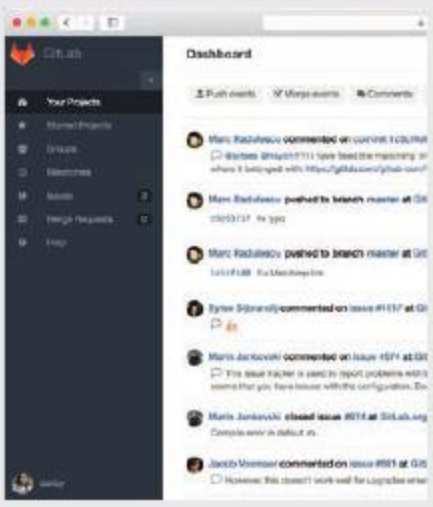
Suitable for: Programming
Web: sublimetext.com (Sublime)
notepad-plus-plus.org (Notepad++)

These free advanced text editors allow programmers to write and edit code in multiple languages. Sublime just supports Mac, while Notepad++ is a Windows-only affair.

GitLab

Suitable for: Source control
Web: gitlab.com

Providing Git repository management, code reviews and the ability to track issues and stay on top of changes, GitLab's free Community edition supports up to 25,000 users on a single server and is MIT-licensed.



KEY RELEASE

THE ENGINE OF KING'S

Amidst all the attention showered on VR at GDC, King quietly went public with a free game engine descended from its own Blossom Blast Saga tech. **Develop** takes a peak under the bonnet of Defold

King is, of course, famous for *Candy Crush Saga*. Its brand is synonymous with the generation of mobile gaming that brought sensationally popular F2P to the masses, and the studio's most recognised release is a reference point for all modern games when they are discussed outside the industry.

What the studio is not known for, however, is releasing game development tools. Or at least it wasn't. Now, King has made its Defold engine available to all developers – for free.

The engine actually began life outside of King, when developers Ragnar Svensson and Christian Murray began building their own engine in 2007. After entering a partnership with King, the pair and their technology were eventually acquired by the mobile giant, and their creation quickly became a firm favourite at their new employer.

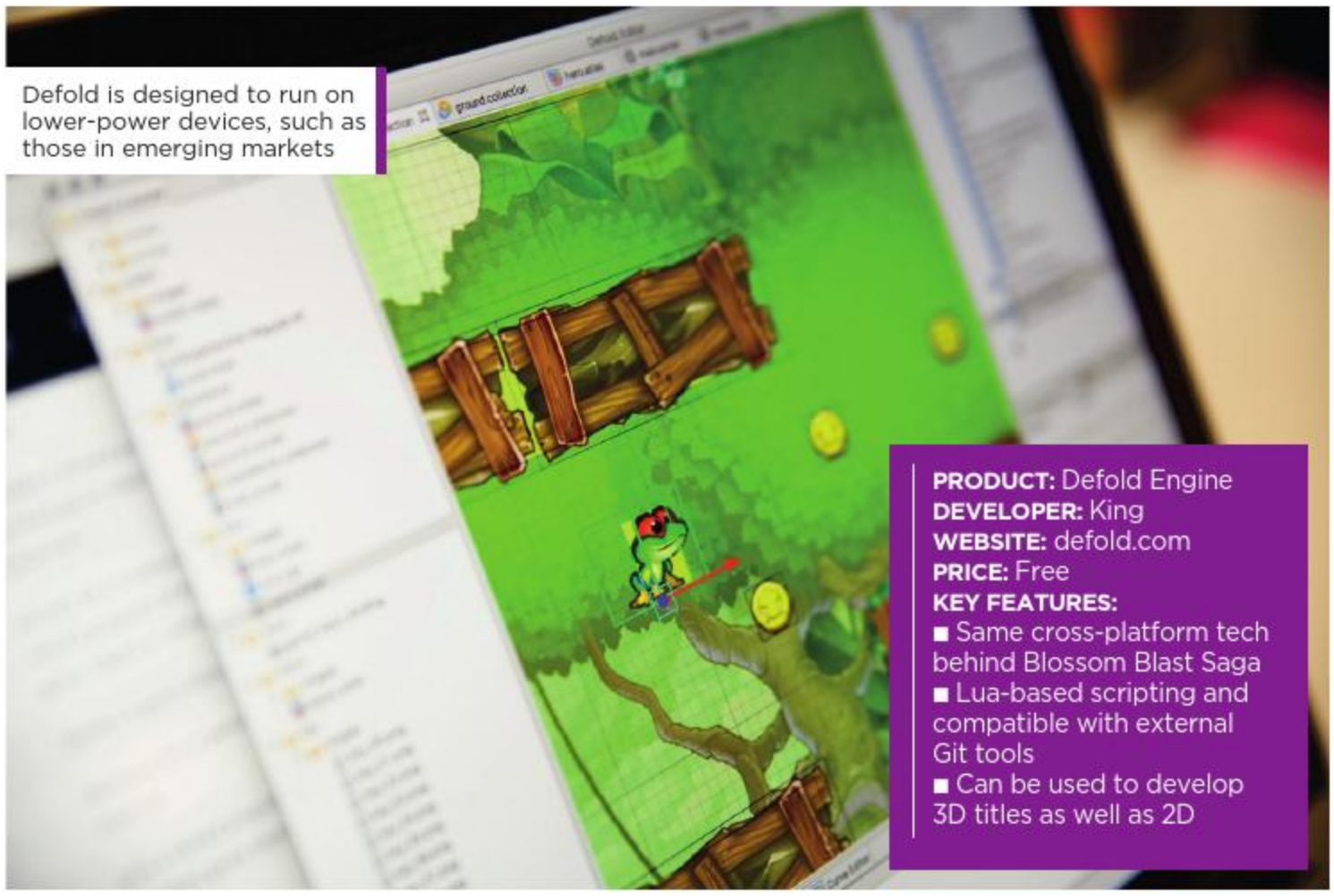
"Defold is one of the game engines we use here at King, and we started to use it initially because it's a great tool, but also because it helps us to have our developers in our multiple studios using the same technology stack," recalls Oleg Pridiuk, an evangelist at King.

Having secured the engine, King has now released it to the public, motivated, says Pridiuk, by wanting to give something back to the developer community.

But there is another reason this 2D-leaning lightweight engine – which uses the Lua language for scripting and is compatible with external Git tools – can now be found out in the wild.

"We also believe a larger userbase will contribute to a better quality product, which will benefit everyone, inside and outside of King," Pridiuk explains. "And should it happen that a great Defold-savvy team decides to become part of our kingdom, we'd be getting a team instantly skilled with our internal technologies; a team able to move very fast with our internal structure.

"In short, bringing Defold public is a way for us to support the game industry ecosystem, as well as making sure the tool keeps developing and improving all the time."



Defold is designed to run on lower-power devices, such as those in emerging markets

PRODUCT: Defold Engine
DEVELOPER: King
WEBSITE: defold.com
PRICE: Free
KEY FEATURES:
- Same cross-platform tech behind Blossom Blast Saga
- Lua-based scripting and compatible with external Git tools
- Can be used to develop 3D titles as well as 2D

BLOSSOMING TECH

The engine itself – which was recently used to create King's own *Blossom Blast Saga* – is a cross-platform solution. It's been conceived to thrive on lower-power devices – such as the tremendously popular smartphones aimed at emerging markets – as well as more muscular platforms.

"The engine is proven to have the features needed to develop and ship high performance mobile and HTML5 titles," Pridiuk asserts. "We see people using it for game jams and development training, and there are a few Defold-authored indie games shipped."

The engine is entirely free; the King team assures potential users there are no hidden costs, fees or royalties. Here, 'free' means 'entirely free' for the foreseeable future.

> **Bringing Defold public is a way for us to support the game industry ecosystem, as well as making sure the tool keeps developing and improving all the time.**
> *Oleg Pridiuk, King*

The engine is also available without any commitment to a closed ecosystem, with the team behind it keen instead to integrate the platform into as many third-party technologies as possible.

"We're very open to opportunities here," Pridiuk confirms.

Defold's feature set – which can be used for 3D projects, despite its 2D focus – is already fleshed out and substantial, but more is promised for the engine.

AN EXPANDING CANVAS

"One of the coolest features we plan to release very soon is HTML5 canvas support," reveals Pridiuk. "We've just released 64-bit Linux support for both Defold-authored games and the editor.

"We have big ambitions and lots of cool stuff is coming," he continues. "Things we are extra excited about include a new super performant programming language and improved 3D support, as well as a set of dev blogs for indie teams to share their work-in-progress."

There's also a call for feedback underway, with King keen to have developers detail their user experience, report bugs and suggest features.

"We want the great games that are built on Defold to be successful, and we have more games built on Defold in the pipeline," Pridiuk concludes. ■

CHOOSING THE RIGHT TOOLS

Marmalade's **Ryan Gilmour** offers start-ups advice on how to equip themselves for their first project

A great game idea is nothing more than that until you actually build something, but doing so can be challenging for new devs.

Tools become a vital part of bringing your vision to life, but with so many engines and toolsets out there vying for developer attention, how do you know which product is the right one for your project?

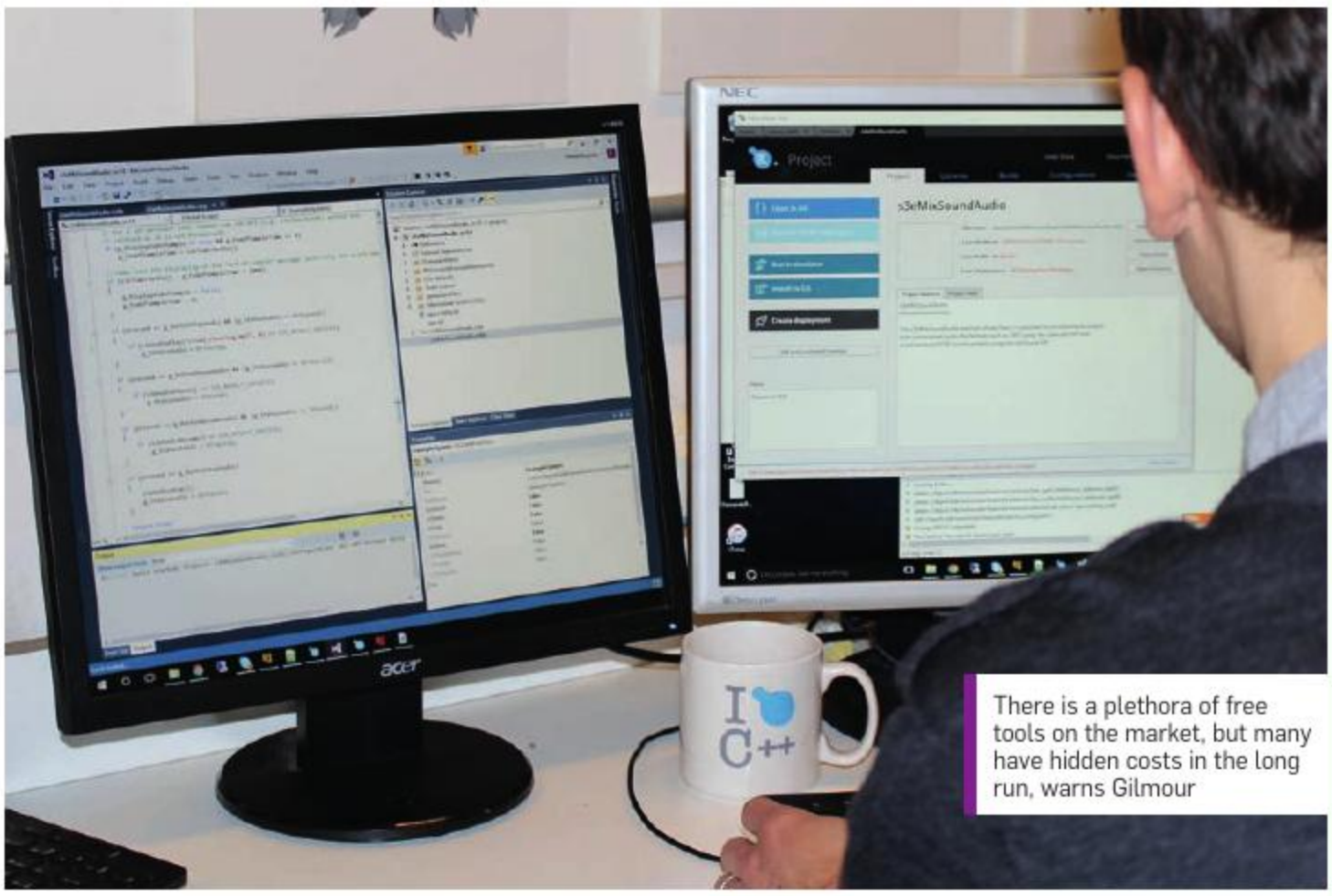
"It always pays to do your homework," advises Ryan Gilmour, head of product management at Marmalade Technologies. "After all, once you make a tools choice you're making a large commitment that can be very expensive to back out of if you later change your mind."

Gilmour goes on to add that devs need to think carefully about the type of game they are trying to make, and how that changes their needs. If it's a 2D-only game, 3D toolkits will be of no use. If you're launching on mobile, will you need to consider console ports in future – or even vice versa?

Much of the developer tech out there is available for free, largely due to tools providers trying to attract indies. It can be tempting to build your game without investing too heavily in the technology running it – particularly if you have little to no budget – but you often get what you pay for.

"It's true you can go a long way without ever paying a penny for tools," says Gilmour. "But there are sometimes hidden costs to free tech. For example, what if you hit a release-crippling defect in your free third-party middleware? What if they don't support a key platform tech that you really want to leverage?

"You might have to be prepared to pay in these scenarios. In many ways, the tools industry has become like the freemium app market where, at some point, to advance you ultimately end up laying down some cash."



There is a plethora of free tools on the market, but many have hidden costs in the long run, warns Gilmour

> **Depending on how much you push an engine, a 'one size fits all' approach may end up working against you.**
> *Ryan Gilmour*

EQUIPPING YOUR STUDIO

Most new developers no doubt opt for a comprehensive engine – one of the leading toolsets that appear to handle everything they need – but Gilmour warns this might not be as simple a solution as it seems.

"It only does 'everything' until it doesn't," he says. "Depending on how much you push an engine, what performance you need and how much you want to mix elements of your solution, a 'one size fits all' approach may end up working against you.

"That's certainly one advantage the Marmalade Platform has offered our in-house studio: its openness and flexibility means you always have the option to use what you get out of the box or, if it doesn't quite meet your needs, adapt or replace components as required."

There is also a wealth of middleware and dev tools that focus on very specific aspects of development – lighting, vegetation, cloud formations and so on. While such specialised products might seem unnecessary, they can also save a lot of time.

Says Gilmour: "Video games development is no different from the wider software development industry where reuse is incredibly common and can be highly effective at increasing your overall development efficiency.

"In particular, the more specialised or mundane aspects, such as graphics, sound and networking, are prime middleware candidates that you should think long and hard about before giving in to the temptation of thinking you can do a better job yourself.

"As a general observation, it's worth saying there's no silver bullet when it comes to games development. At some point, you need to put the hours in to create a result that stands out from the crowd.

"While tools can help, they're only as powerful as the person wielding them." ■

WHY MARMALADE MATTERS
Through Marmalade Platform, the company offers a wide range of tools to suit any start-up's development needs, whether they're working on a 2D or 3D title, or a variety of platforms.
www.madewithmarmalade.com

HOW TO RENDER PORTFOLIO IMAGES USING SUBSTANCE PAINTER'S IRAY INTEGRATION

Allegorithmic senior community manager and technical artist **Wes McDermott** reveals how to use Substance Painter 2.0's new integrated Iray renderer to make your ArtStation portfolio stand out

Of the many new features in Substance Painter 2.0, one that's been especially exciting to the user base is the addition of Nvidia's Iray renderer – now fully integrated.

In line with the artist-friendly design that Substance Painter is known for, Iray rendering is also easy to use, and provides an excellent toolset for creating portfolio images.

In this walkthrough, we are going to take a look at how Iray can produce these images, which can then be uploaded directly to your ArtStation account – all from within Substance Painter.

THIS MONTH'S TUTOR

Name: Wes McDermott
Role: Technical Artist/Senior Community Manager
Company: Allegorithmic

Bio: McDermott is a technical artist with over 13 years of experience. He strives to improve his work by finding a key balance between technical knowledge and artistic skill sets. He works for Allegorithmic producing training content and demoing the Substance toolset.

01 NVIDIA IRAY INTEGRATION

Substance Painter was built from the ground up to author physically-based textures, and Iray is an interactive physically-based renderer that generates photorealistic images by simulating the physical behavior of light and materials.

To render your project, you simply need to select the Iray mode; Painter's UI layout will change to provide a minimalistic viewport focused on rendering.

Iray progressively refines the image until it hits the maximum render time set by the user. The rendering process is very interactive and visual. You set a time and let Iray progressively render the image until the quality is where you want it. It's that simple.

02 MATERIALS

Substance Painter is built upon a physically-based workflow. When working with Iray, the Substance Painter real-time shader has an equivalent MDL (Material Definition Language) with settings that are appropriate for rendering with Iray. Nvidia's MDL is designed to share physically-based materials between applications.

The best part is that you don't have to create new materials; everything you paint using the PBR real-time shader is adapted to the Iray MDL for rendering.

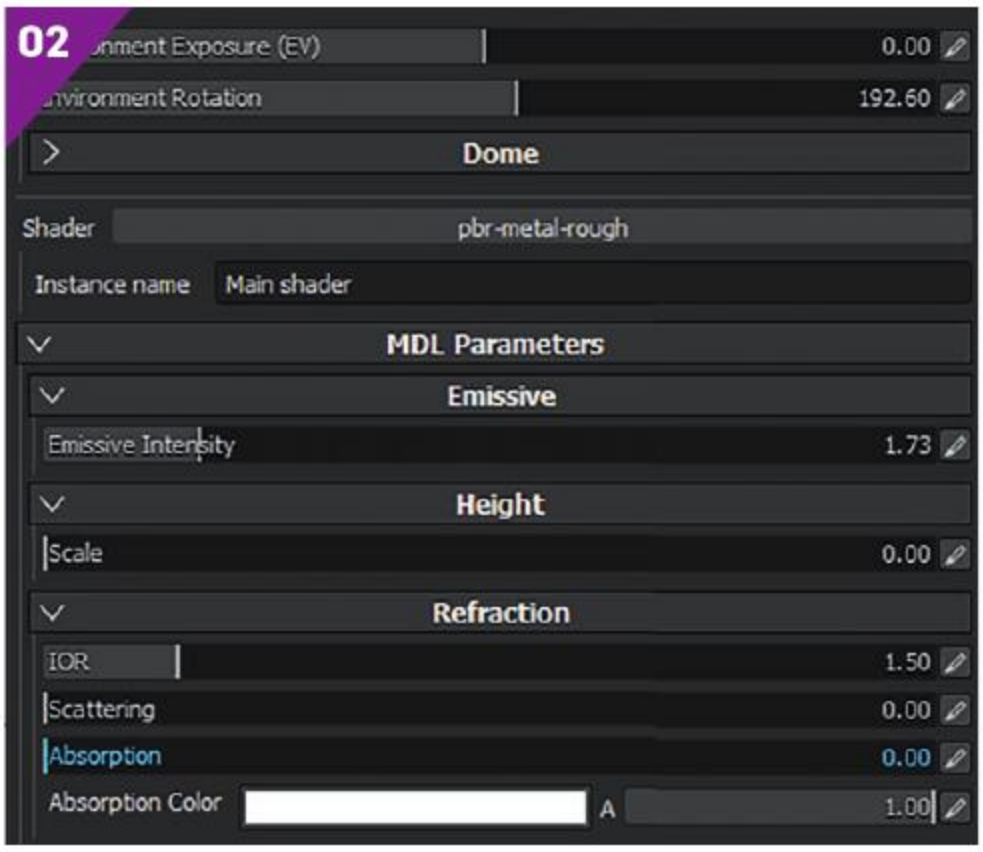
03 POST-PROCESSING EFFECTS WITH YEBIS

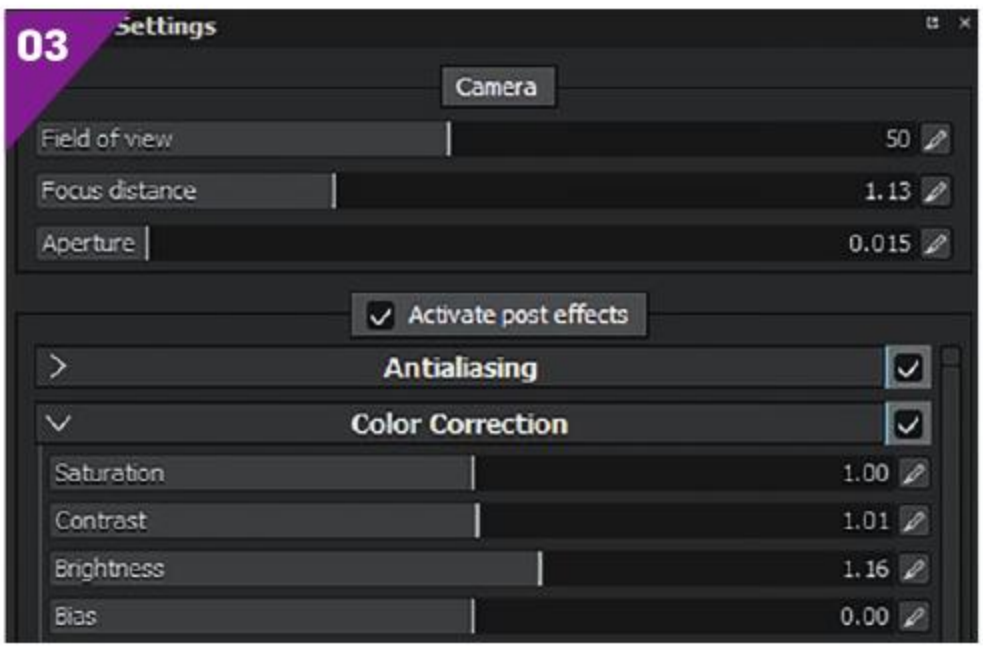
Yebis post effects can be used in your final Iray rendering. The post effects are rendered on top of the Iray render and allow you to add additional effects such as bloom, vignette, tone mapping and color correction. Using Yebis, you can color grade the render to produce the final image.

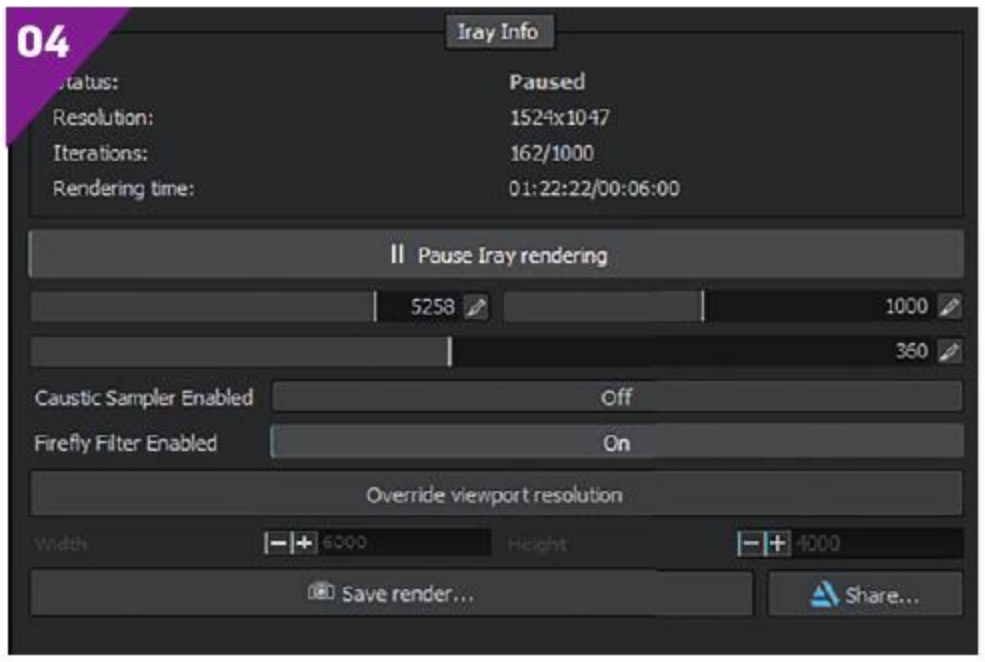
The Yebis post effects can be changed without having to re-render the image, so you get a very interactive experience that allows for rapid iration.

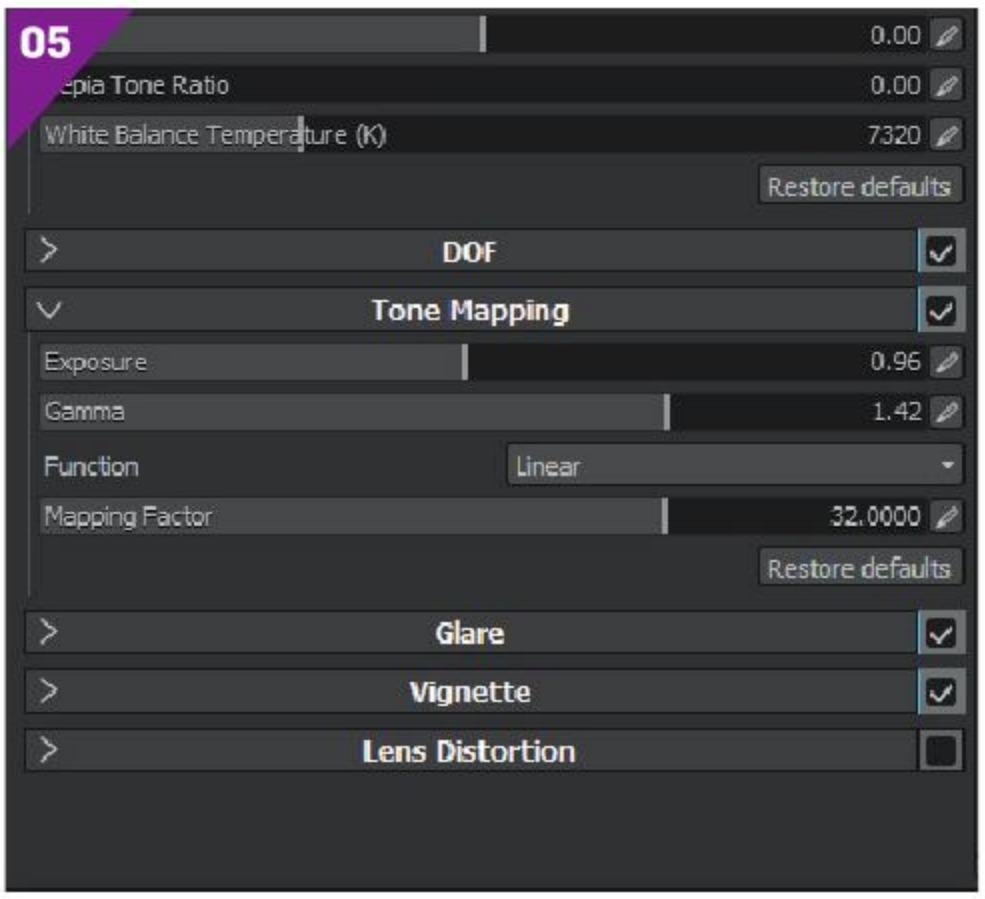
04 RENDERING SETUP

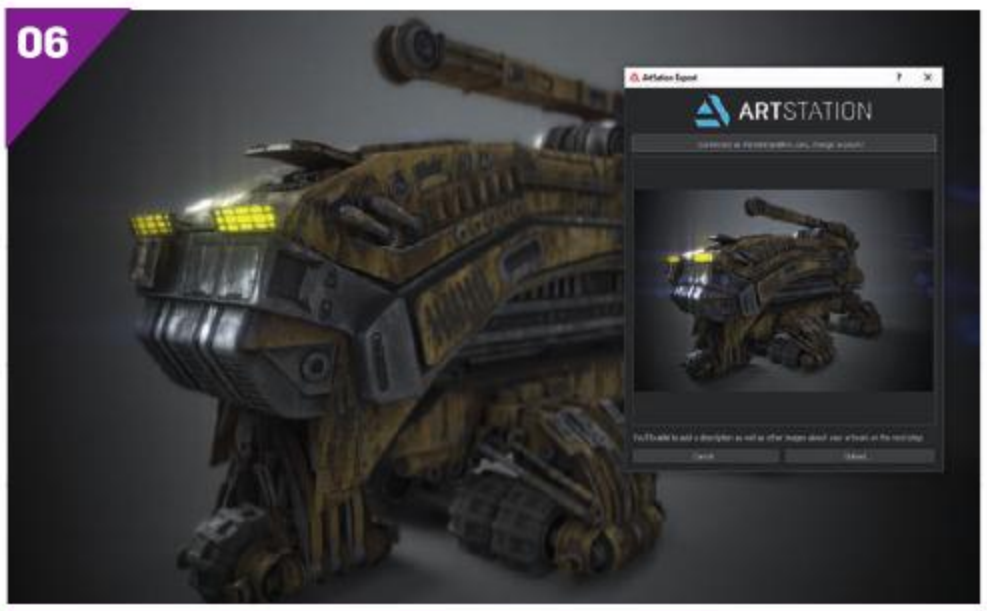
1. In the toolbar, change the viewport mode to Render (Iray).











2. Before setting the refinement time, you will first setup the camera angle using the standard viewport navigation. Using the Field of View control on the Display Settings tab, you can set the FOV for the render.

3. You will want to go ahead and enable post effects on the Display Settings tab so that you can make changes to the effects without having to trigger a new render.

4. Iray will already be trying to progressively refine the image based on the default settings. While making tweaks, you will want to keep the max render time setting low in the Iray Settings. The render time value is expressed in seconds, so for my render I used a value of 360 – which means Iray will refine for six minutes.

5. You may also want to set a specific resolution to render. In the Iray Settings tab, you can click the Override Viewport Resolution button and set an exact pixel size to render.

6. In the Viewer Settings, you will want to make sure that the Ground option is enabled so that you can render ground shadows. Also, I enabled the Clear Color option to remove the HDR background image from the background and replace it with a solid color. This only affects the presentation – the lighting is still coming from the HDR image you have set.

05 ADJUSTING POST EFFECTS

1. Once the render has hit the refinement time you set, you can then interactively adjust the post effect settings to create the final image.

2. I enabled Vignette with a strength of 0.68.

3. I enabled Glare and changed the luminance and threshold to produce the desired blooming effects. I then set the Shape to Vertical Streak to change the glare shape.

4. I used Depth of Field (DOF) as a post effect so that I could interactively adjust it. Iray can create a more physically correct DOF, but it takes longer to refine. You set the level of blur by adjusting the aperture value in the Display Settings. You can interactively set the focal distance by using Ctrl + middle-click to set the focal distance.

5. The Tone Mapping controls can be used to adjust overall exposure and gamma. Since you are working with HDR data, you can decrease the exposure to reveal detail in highlight areas.

6. The final setup is to adjust the Color Correction settings. Here you can control the overall tonal ranges of the image, as well as change the White Balance to add a grade to the image.

06 UPLOADING TO ARTSTATION

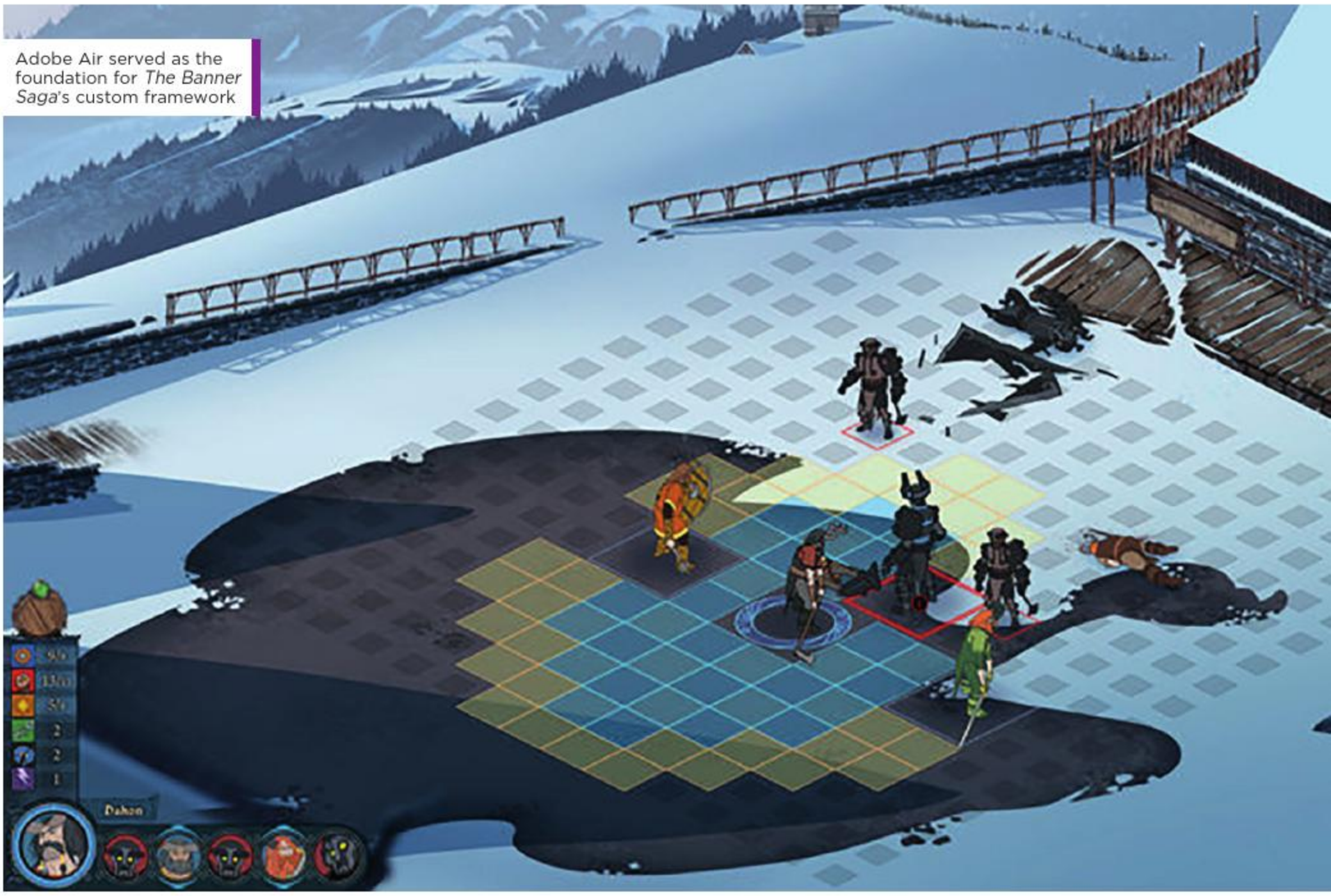
1. You can upload your image directly to your ArtStation account or save the image directly. If you save the render, using a format that supports transparency will result in the background being transparent. If you want to include the background, you need to save to a format that doesn't support transparency.

2. In the Iray Settings tab, click the ArtStation button to begin the upload process.

3. You will be asked to login to your account and the upload dialog will present you with the option to upload your artwork. You can choose to create a new project or add images to an existing project. ■

CONCLUSION

With the Iray integration, Substance Painter gives you a viable and easy option to produce portfolio-quality renderings. Producing renders is quick and interactive and you can use the same shaders used in the real-time viewport. It's important to understand that Iray will progressively render the image and the main setting to control quality is maximum time.



Adobe Air served as the foundation for *The Banner Saga*'s custom framework

The develop Post-Mortem

THE BANNER SAGA

With The Banner Saga 2 now out in the wild, the team at Stoic takes time to reflect on making the first game. **Will Freeman** learns how a Viking epic prepared the studio for a dazzling sequel

When Stoic's tactical RPG *The Banner Saga* arrived on PC and Mac in 2014, it was immediately striking.

Exquisitely well-drawn and beautifully hand-animated, the game by a team of former BioWare staff boasted a distinctly accessible turn-based combat mechanism and a branching narrative that deftly juggled a sense of player freedom with a tight, well-paced delivery.

Two years on, *The Banner Saga 2* – the second part of a planned trilogy – has arrived, and it's got the Stoic team in a reflective mood. After all, it is the work on the first game that allowed the team to push themselves further for the sequel.

> **If you're going to build a game of any complexity, you're going to be building an engine.**
>
> *John Watson, Stoic*

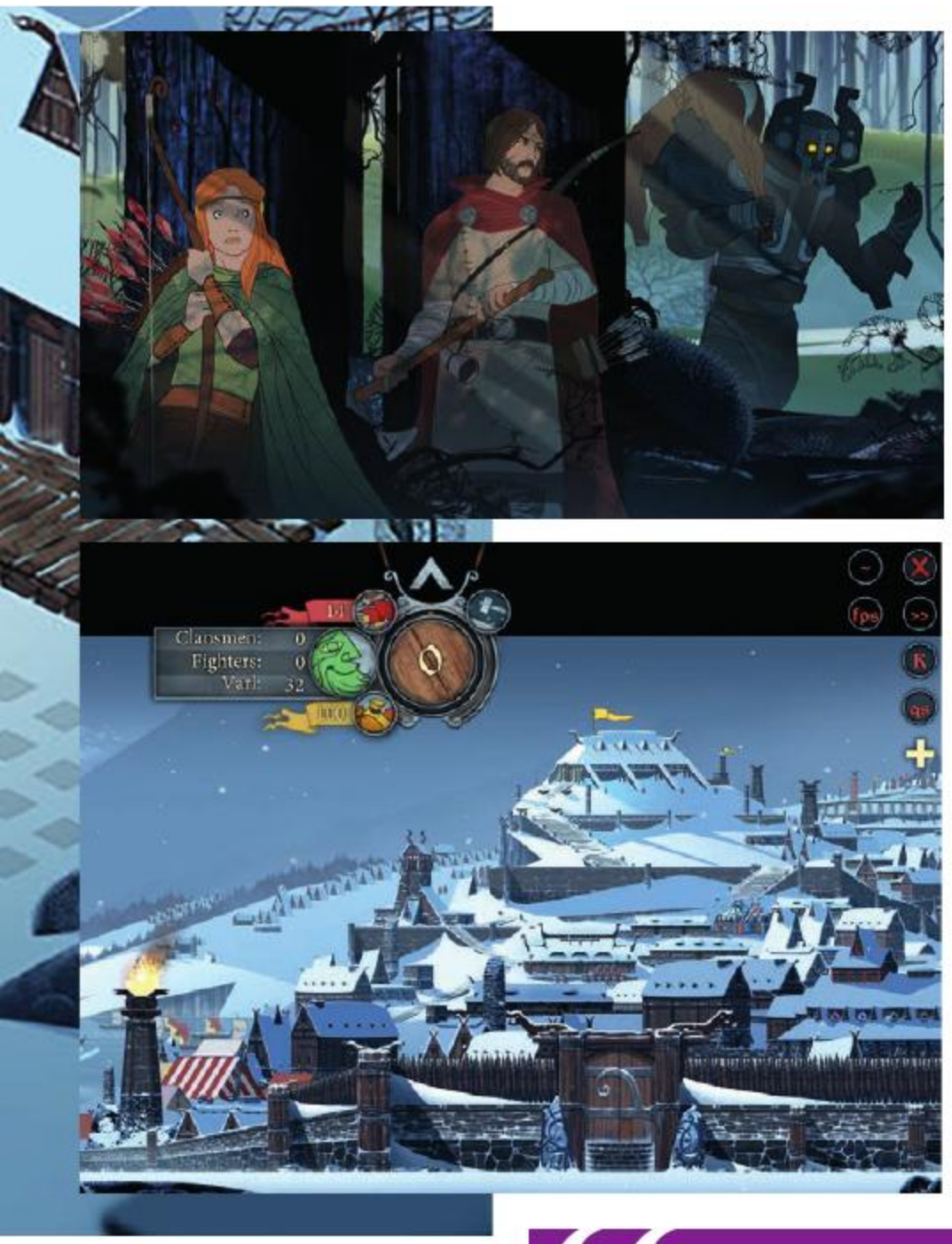
ON THE AIR

Famously, *The Banner Saga* was created with a custom engine; a move that, perhaps surprisingly, was conceived to allow the team to move quickly and start creating content from the off. Except, of course, games development is never so simple, and even describing Stoic's development platform as an 'engine' might be a little inaccurate.

"The word 'engine' has a lot of different meanings to a lot of different people," offers Stoic co-owner and technical director John Watson.

"One thing to understand is that, really, if you're going to build a game of any complexity, you're going to be building an engine for your game, even if it's on top of something like Unity.

"We had all these bespoke game systems like the tactical combat, unique ability system and our RPG class systems, and then the stage dialogue."



Stoic was in a position many other developers will empathise with. The team had a strong idea of what they wanted to build and, as such, needed a technology solution optimised for their vision. At the same time, it wanted to get working on content as soon as possible. All of which meant there wasn't the time or need to write a custom solution for the fundamentals of game development, such as rendering, audio, keyboard and mouse input and networking.

"Never build that yourself," Watson advises other studios.

Ultimately, the decision was made to let Adobe Air handle the elementary foundation, on top of which Watson and his colleagues built a custom technology framework within which they forged their game.

Adobe Air isn't the most obvious choice of game technology, but it worked for Stoic, and happened to perfectly compliment its approach to that sumptuous animation style; one that is so hard to capture without a human hand painting each frame.

> **On *The Banner Saga 2*, we absolutely bit off as much as we could chew. But it wasn't more than we could chew.**
> *Arnie Jorgensen, Stoic*

FLASH BACK

Adobe, of course, is also behind Flash, a perennial platform across the creative sectors, loved and loathed in equal measure.

"The way hand animation is done, in the majority of cases, is in Flash," Watson explains. "If you watch Cartoon Network or animated television shows, they're done in Flash. So the artists that were creating our art for us were creating it in that format. One nice thing about Adobe Air was that we could take that content, in the native artist format, and render it in the game."

That approach let Stoic begin on its best foot, launching the team into a furiously productive opening development stage. By the end of *The Banner Saga*'s creation, Watson and his colleagues had changed their rendering pipeline so as to use efficient raster-based sprite sheets. However, using Adobe Air at the off allowed the team to delay time consuming work on a rendering pipeline, and focus on the development of content, quickly building a clear vision of their game world.

"Throughout the whole development, the focus was on content; asking how we get the game playable, get content in and get it so that we can see it, feel it and know what we're doing," confirms Watson. "We were going to worry about the performance and portability later. That's what allowed us – as a really small team – to actually finish the game in two years, and do it as well as we did."

That process is part of what John describes as a 'technical debt' approach, where the work is easy and productive upfront, at the expense of ease of porting and other work later. By the time Stoic took to porting *The Banner Saga* to console, it would feel the pinch of that debt. But the team remains confident taking out a technical debt let them make a successful game.

"If we hadn't been willing to take on some technical debt then, we might have taken a lot longer to finish the game, and that would have been very bad for us, because we had limited budgets and limited time," Watson asserts.

FORKED LIGHTNING

Another challenge – and triumph – of *The Banner Saga* is its branching narrative. It was written largely using Inklewriter, an interactive fiction tool by *80 Days* outfit Inkle that was never expected to be used on such a polished game. In fact, Inklewriter is more commonly associated with classroom use.

"Using the Inkle tool is another example of technical debt, really, as it got us off the ground quickly," states Watson. "It meant that I didn't have to write a branching dialogue tool. Straight away we could immediately start writing content for the game."

Indeed, four years after beginning work with the tool, Inklewriter is still in use at Stoic, and in wielding it, the team have learned a great deal about the delicate art of building interactive narratives. Of course, with its heritage in BioWare's history, Stoic has worked on projects with renowned branching game writing before. But the fact remains; for a small team, structuring a game with narrative forks is a momentous task.

"People want diverse endings and branches in games that would blow any studio's budget," suggests Drew McGee, freelance lead writer and former writer and designer at Stoic. "Every breath you take and every eyelash [your characters] bat makes your title a different game. That's not something feasible, so what we learned and discussed early on for *The Banner Saga 2* is that we write to the idea that the player is the leader of a caravan, not a god or leader of the world.

"That means what you do and the choices you make can have drastic impacts on the people around you and the way they see you, but not necessarily across the world as a whole."

CLEAN CUT

Creating any game, of course, means challenges, and the Stoic team faced plenty. In particular, developing *The Banner Saga* offered a powerful lesson in understanding the editing process.

"We probably over-scoped on the first game at the start," co-owner and art director Arnie Jorgensen muses. "We then cut right back, and we had to leave a lot on the cutting room floor. That was difficult; very difficult. We did well on that by the end of *Saga 1*, but at the beginning we weren't really sure what we could pull off."

That whole process, of course, has been hugely useful for the recent work on the sequel.

"On *Saga 2*, we have a lot better idea of what we can pull off," Jorgensen says. "We came in right where we wanted to be with the length, and that is really tricky to do. At times it felt like we working on it blind, not knowing the true scope of it.

"On *Saga 1* we bit off as much as we could chew, but that meant on *Saga 2* we could absolutely bite off as much as we could chew again. But it wasn't more than we could chew. That was important." ■

HEARD ABOUT

PRIMAL MUSIC PRODUCTION

John Broomhall talks with composer Jason Graves about making ancient history sound contemporary

Composer Jason Graves used abstract instruments and techniques to capture *Far Cry Primal*'s prehistoric soundscape

Far Cry Primal is the latest top tier video game score in Jason Graves' impressive canon, which sports blockbusters like *Dead Space*, *Tomb Raider* and *The Order: 1886*. With games in the sights of all media composers, devs can select from a stellar array of talent. So how important are music mixing and production skills to the composer, wanting to keep one step ahead?

"They're equally as important as composition," says Graves. "There's no John Williams-style demo-ing it at a piano and saying you'll really hear it at the recording – even demos have to sound 'finished'.

"I came through the ranks doing orchestral mock-ups, creating bespoke sample libraries and mixing everything. Now I'm rubbing elbows with LA folks who have assistant composers, alternate 'team' composers or ghost writers... When people hire me, they actually get me. I'm in this business because I love creating music – I'd rather do less work better on my own than the opposite. As a one-man show, mixing and production skills are more important than ever."

> **With lead times of months or even years, the only way to be current is to be original.**
> *Jason Graves*

For his prestigious *Primal* project, Graves faced a six-month involvement, with the music production pipe needing to 'go large' for the last three. A production strategy to minimise and mitigate risk was vital. The first 90 days were spent planning and conceptualising, and testing three new DAW templates – one for each tribe with different instruments and mix set-ups. Doing so, he harnessed some neat production tricks.

"I enjoy figuring out ways to apply fairly abstract mixing ideas to what I'm doing ," says Graves. "For example, a dance music-style side-chain set-up – except instead of a kick drum, I had a giant piece of firewood hitting a wooden box, and the offbeat was my shrubberies. This pumped the sound providing those extra accents via attack and sustain from the compressors."

A MAMMOTH TASK

Three short music 'suites' were demoed for sign-off on overall sonic and compositional direction. These became the final templates for mixing, sounds and production.

"The idea was that by the time I hit the final period with eight to nine hours of music to finish, I wasn't thinking about mix engineering or recording parameters – it was all good to go," Graves explains. "I had to mix a little bit for every cue but the bulk of the mixing work had already been done."

The game itself proved to be Graves' biggest source of inspiration, he adds.

"No-one wants their game sounding dated but, with lead times of months or even years, the only way to be current is to be original," he explains. "Fortunately, I seldom get asked to make it sound like 'this or that'. There are no comparisons to film or previous game scores nowadays.

"That's where games really shine – titles like *Primal* are taking chances and pushing the envelope to get something musically unique." ■

John Broomhall is a game audio specialist creating and directing music, sound and dialogue
www.johnbroomhall.co.uk

ALL WORK, ALL PLAY

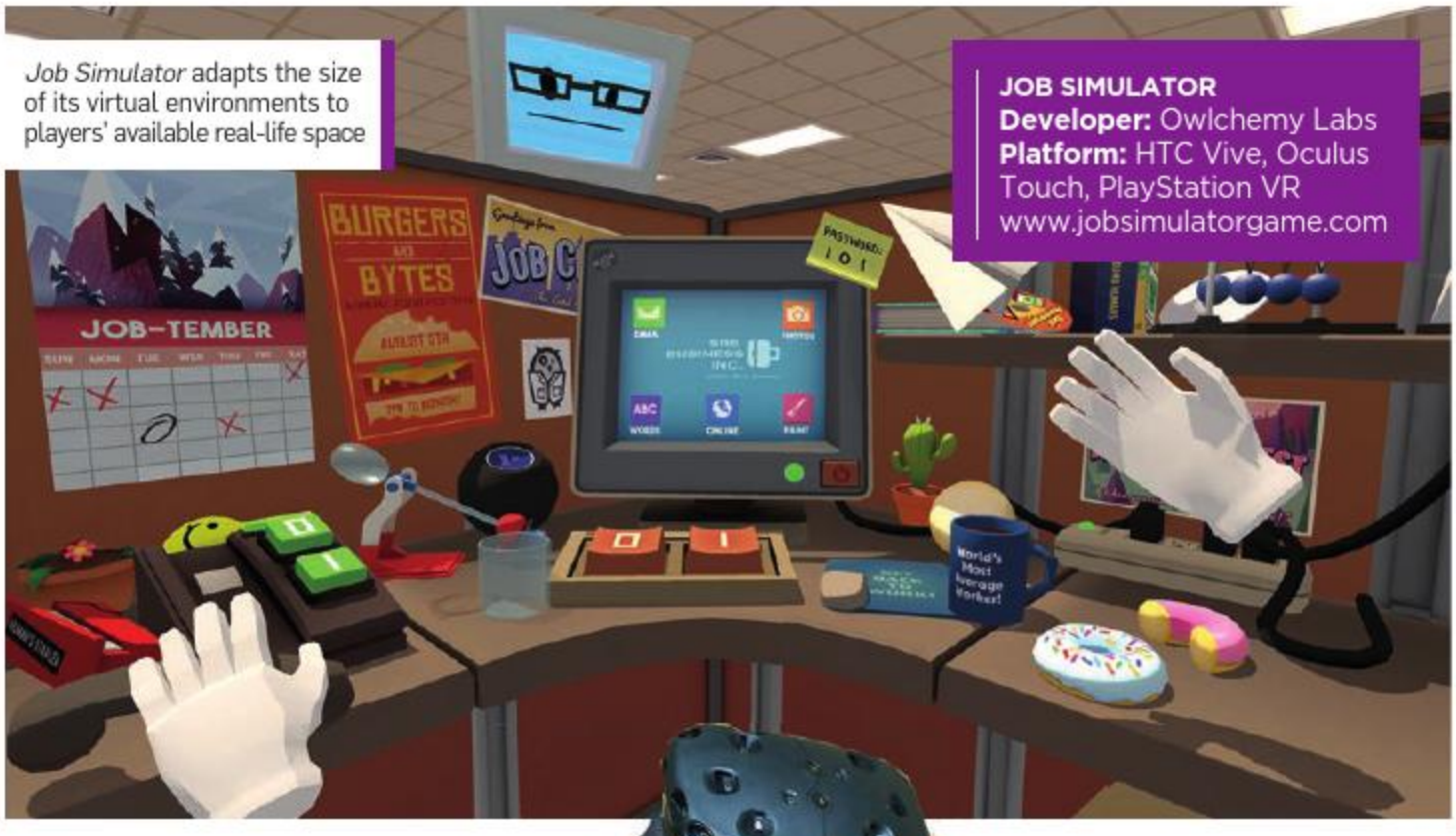
If making menial employment fun wasn't hard enough, Job Simulator contended with the unexplored design quirks of VR. CEO **Alex Schwartz** explains how Owlchemy Labs made the tedious terrific

Games allow players to fill the virtual shoes of a limitless number of exciting characters, from fantasy adventurers skilled with a blade to bulletproof action heroes.

Yet, when Owlchemy Labs was considering what it could bring to the new medium of virtual reality, it settled instead on comparatively dull tasks. Instead of slaying dragons, bagging groceries. Conquering the world replaced by making a sandwich.

It may seem bonkers, but it works – and it's all thanks to the power of VR.

"People don't expect it, because it doesn't really read as something that would be a mind-blowing experience," explains CEO Alex Schwartz. "It turns out that interacting with your hands and having those physics moments that really seem realistic feels magical."



Job Simulator adapts the size of its virtual environments to players' available real-life space

JOB SIMULATOR
Developer: Owlchemy Labs
Platform: HTC Vive, Oculus Touch, PlayStation VR
www.jobsimulatorgame.com

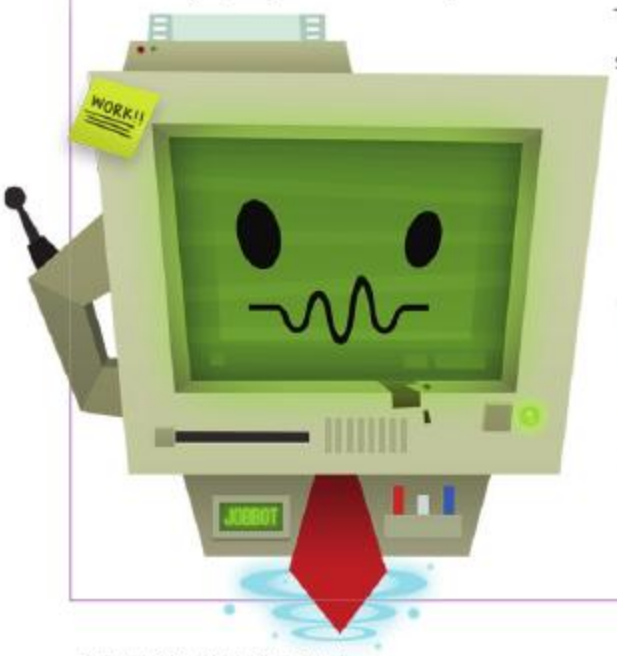
FUNEMPLOYMENT

Like any trick, creating *Job Simulator*'s magic is more than meets the eye.

Virtual reality throws up a host of new considerations for developers, both in-game and back in the real world. One universal problem, whether building for the HTC Vive, Oculus Rift or PlayStation VR, is the presence of the headset's cable, which can cause problems for those 'wrapped up' in VR's physical nature.

"One thing we do is we try not to encourage people to have to spin in place a lot," Schwartz reveals. "There are things to your right and left, and minimal things directly behind you. There's a natural 'forward' and, with that sense, people don't start to twist themselves too hard."

> **We can't tell whether a VR game will be fun until we try a prototype.**
> *Alex Schwartz, Owlchemy*



The platforms have their own specificities, too. Moving from the Vive's room-scale VR to the static standing experience of the Rift and PlayStation VR can result in huge gameplay differences.

"We use Unity – they've almost removed some of the technical hurdles of porting and it's become more of a design hurdle," Schwartz says. "You've at least got motion controls on all three and you can move around a bit using some kind of tracking solution, but the solution is different on all three. You've got to adapt your game from a design standpoint to work in all these different environments."

With players' comfort potentially on the line, making the transition between setups as smoothly as possible is critical. Schwartz says that, in the best case scenario, users won't even realise something's changed – even when it has to.

"We port across all three and make platform-specific changes to how it should work on each device and little adjustments to the environments," he details. "We auto-adapt the environments to the size of your tracking space. It's invisible to the player, but a lot of work for us. We wanted to do that so no-one has this moment where they see a thing and want to reach it, but it's just behind a physical wall. You forget about what the real world is when you're in VR, so when it comes screeching to a halt and you hit something, it's very disappointing. We want to avoid disappointment at all costs and make a fun experience."

MAKING MAGIC

Not every VR experience will be a success. But titles like *Job Simulator* embodies VR's penchant for turning traditional game design on its head.

Schwartz advises studios seeking the next surprise hit to simply get started.

"We can't ever know whether a game is going to be fun in VR until we try a prototype. If anyone spends too long ahead of time writing a design doc, it's going to fall on its face.

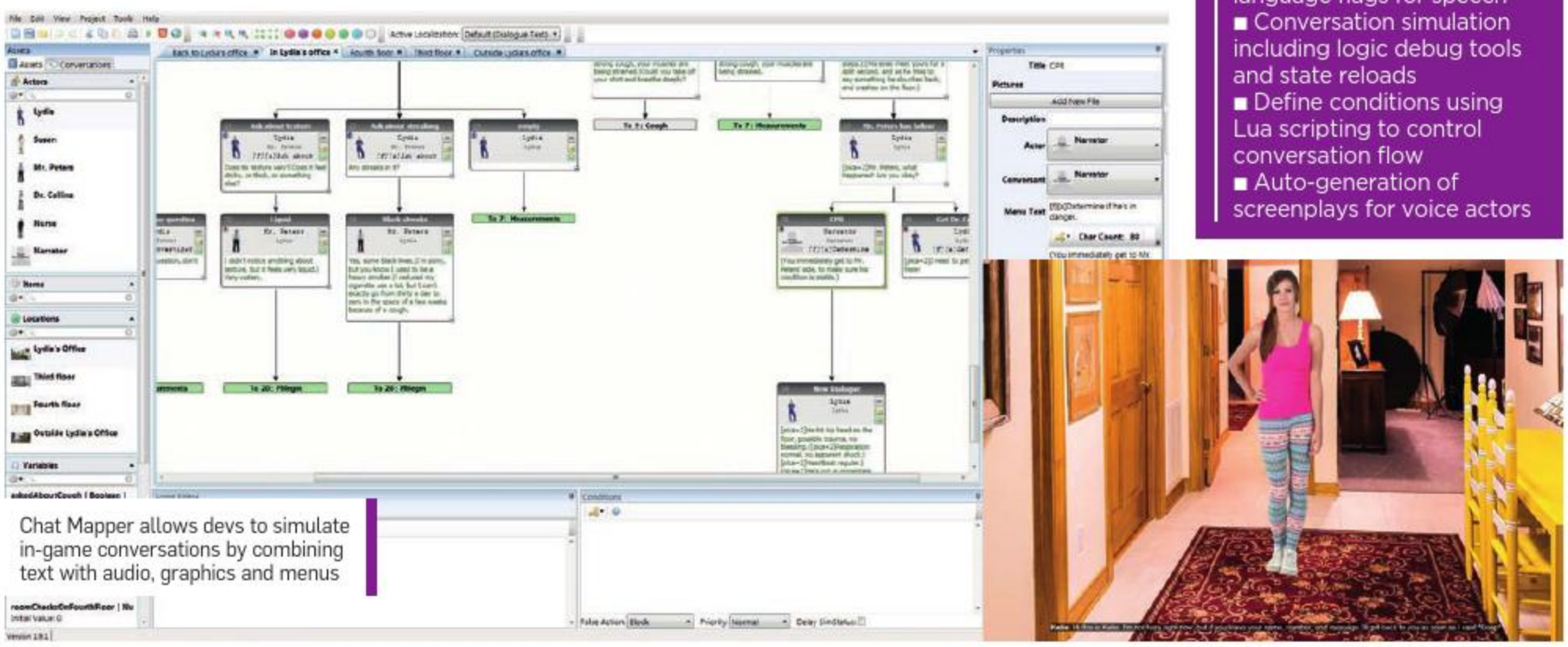
"You just don't have that core nugget of what's going to be fun yet, until you try it." ■

TOOLS SPOTLIGHT

CHAT MAPPER

For developers, narrative designers and writers finding themselves a little virtually tongue-tied, Chat Mapper's non-linear dialogue editor might have just the cure. LearnBrite CEO **Danny Stefanic** opens up about the tool

PRODUCT: Chat Mapper
DEVELOPER: LearnBrite
WEBSITE: chatmapper.com
PRICE: Free (No income allowed), $65 (Indie), $495 (Commercial), On application (Publisher)
KEY FEATURES:
- Interactive branching scenarios with tap-to-proceed dialogues and language flags for speech
- Conversation simulation including logic debug tools and state reloads
- Define conditions using Lua scripting to control conversation flow
- Auto-generation of screenplays for voice actors



Chat Mapper allows devs to simulate in-game conversations by combining text with audio, graphics and menus

Whether your game stars just one character or a whole cast, keeping track of who's talking when and what they're meant to be saying can be a chore.

Luckily, a number of software solutions exist to make managing dialogue that much easier. One of them is Chat Mapper.

"At its core, Chat Mapper is a dialogue editor tailored for branching conversations," details Danny Stefanic, CEO of LearnBrite. "It's a very visual way to see and plan the flow of a conversation while you're writing it, to help you wrap your mind around the whole of the dialogue instead of one branch at a time."

Chat Mapper utilises a tree graph interface which breaks dialogue options and outcomes into branches stemming from a single conversation entrance point.

"It helps you understand your dialogue, and that understanding is what I personally find most useful: it engenders a consistence in dialogue," Stefanic continues.

"I'm sure you've experienced jarring dialogue trees that clearly loop in some part or other; understanding the flow of your conversation and all the possible paths a user can take makes it easy to avoid that to increase richness and engagement."

With games increasingly putting a premium on dynamic gameplay and emergent storytelling, as proved by the enduring popularity of story-driven series such as Telltale's *The Walking Dead* and Dontnod's *Life is Strange*, accounting for a greater variety and diversity of conversations between characters and narrative consequences can be key to a title's success.

> **Understanding the flow of your conversation and all the possible paths a user can take makes it easy to increase richness and engagement.**
> *Danny Stefanic, LearnBrite*

"There's been quite a number of indie and triple-A games developed with the help of Chat Mapper in the last few years," Stefanic offers by way of example. "Some notable titles in recent memory include *The Last Door* by The Game Kitchen, *Tokyo Dark* by Cherrymochi Game Studio and *Herald* by Wispfire."

CLEAR SPEECH

Though writing dialogue can be as straightforward as putting words to page, Chat Mapper has a number of features that account for the changing nature of development.

These include the ability to simulate conversations, combing the script with audio, graphics and menus to present a mock-up of the finished game. The tool can also track and resolve logic bugs, allowing devs to save and reload simulations from any point.

To help teams evaluate their game's conversations, Chat Mapper features a set of reviewer tools that allow devs to attach comments to dialogue, as well as locking text from editing and enabling the review status of specific nodes.

"Chat Mapper has a clean interface that helps the user do what they need to do, instead of drowning them in a sea of barely-used features," adds Stefanic. "We support Lua script for users that want to script more interactivity in their dialogue; the user can choose how much or how little of Chat Mapper's features they can use, but their script won't suffer from the outcome of that decision."

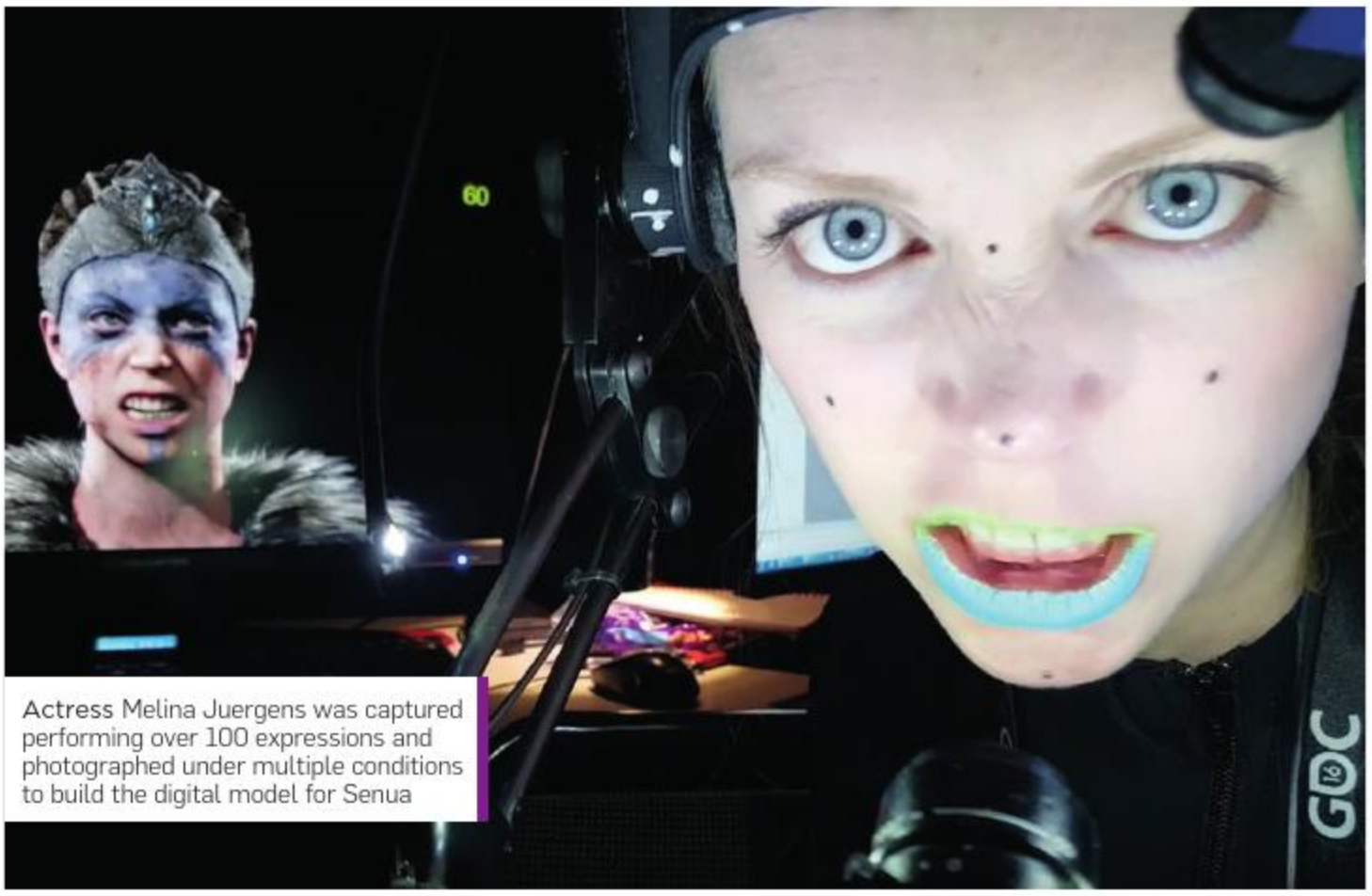
Another feature is the ability to automatically produce screenplays suitable for voice or live-action actors based on the dialogue tree, although data can also be exported to a number of other formats. Developers wanting to output in an unsupported format can write their own .NET-based exporter using Chat Mapper's SDK, which is included with the commercial licence of the software.

"Support for Javascript and HTML5 was added in our latest update, which increased exponentially the power a user has over the tool," Stefanic says.

"Since our latest update, we've gone back to the guts of the tool. We have some exciting updates in store." ■

REAL-TIME DIGITAL HUMANS

Epic explains how animation driven by live performance can help games cross the uncanny valley



Actress Melina Juergens was captured performing over 100 expressions and photographed under multiple conditions to build the digital model for Senua

As the worlds of film and interactive entertainment continue to merge, there are often questions that arise about crossing the uncanny valley.

For years, the film and games worlds have been progressing towards that sought-after point where believability goes beyond effort and becomes organic. Where the virtual becomes reality.

A major step towards that universal goal was achieved at this year's GDC, where the *Hellblade* real-time facial demonstration was one of the more talked-about exhibits of the show.

"We wanted to create one of the most believable characters out there," recalls Ninja Theory's chief creative director Tameem Antoniades. "Senua, played by actress Melina Juergens, is a Celtic warrior on a journey into the heart of a Viking clan who is struggling with psychosis. We wanted to represent the physical, emotional and mental trials of her journey."

The advanced facial rig used in the demonstration was built and optimised for real-time performance by the world-class animation house 3Lateral, while Cubic Motion – a leading provider of facial animation and advanced computer vision – used the demonstration as an opportunity to launch a revolutionary new system for live real-time animation.

> **Virtual characters that are stunningly real and present will soon be able to interact with you in ways that just weren't possible before.**
> *Tameem Antoniades, Ninja Theory*

After visiting 3Lateral's high-end face scanning and rigging experts in Serbia to construct a digital double of Juergens by capturing over 100 different expressions, Ninja Theory was left with an in-engine model that could express every possible visage and mannerism.

EXPRESS YOURSELF

While expression is an essential element of believability, producing realistic visuals on the model itself was required to master the effect.

That's why the team photographed Juergens under various lighting setups to recreate a realistic skin shader that could react with light to simulate wrinkles, blood flow, peach fuzz and subsurface scattering. Juergens' body was then scanned to create a body double while artists worked to model and texture clothing to match.

Meanwhile, Cubic Motion in Manchester was busy developing a facial solver that could translate video of Juergens' face directly onto the facial rig in real time. A small team at Epic Games then helped stream and synchronise the face, body, voice and scene data in real time within the *Hellblade* game world.

"In the very near future it means that virtual characters that are stunningly real and present will be able to interact with you in ways that just weren't possible before," said Antoniades. "When you're actually in virtual reality and you're looking into the eyes of this character it really puts you there and it feels like we're one step closer to the future we imagined."

Perhaps most impressive, however, is the fact that this entire facial animation demonstration was designed, constructed and performed live in just seven weeks – a testament to the collaboration, creative innovation and technical talent that brought the demonstration to life.

"This marks an exciting change in terms of what is possible for game, virtual reality and movie production," added Epic CTO Kim Libreri. "We've taken a big step forward in crossing the uncanny valley and I would love to see what other developers can do with this technology." ■

ASK AMIQUS

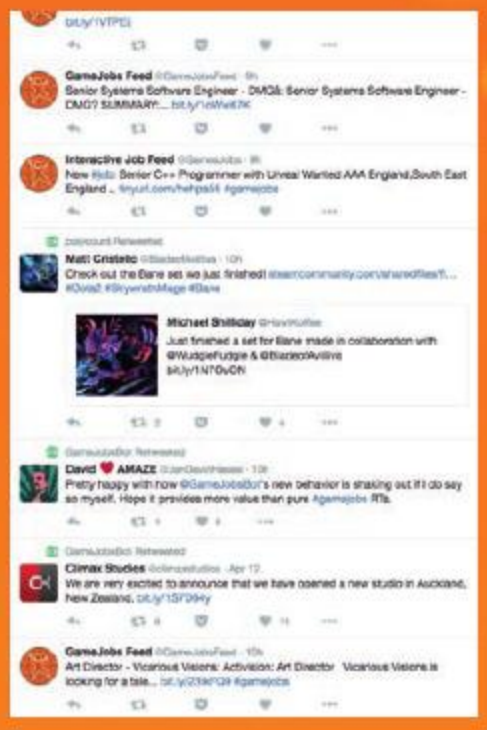
Q As an indie developer, how can we grow our team when we've already hired everyone we know?

When you start out as a business founder, your own connections and network will no doubt enable you to establish your core team. This provides a great start and it makes sense to talk to people you already know who might have the skills you want, as this can save you a lot of time and trouble.

But as your business grows, what next? One of the most exciting and challenging times for an indie developer is when you want to reach out and recruit from the wider market. Where do you start and what's the best approach?

The first step is clarity about what skills you want to hire and why. Why do you need this person? Where will they fit in the team? What's the impact if you don't hire? Can you commit to the time and financial investment a new person needs?

Be clear, first of all, that hiring is the right thing to do. Considerations are even greater if you are looking to recruit a whole team. Setting aside the practical issues of desk space and infrastructure, a key question here is who to hire first and how to prioritise joiners to stagger start dates, ensuring the on-boarding experience is as smooth as possible. If you need to secure investment or a project, be cautious over the timing of your recruitment efforts.


GameJobs Feed
Senior Systems Software Engineer - DMG8: Senior Systems Software Engineer - DMG? SUMMARY:...
Interactive Job Feed
New #job: Senior C++ Programmer with Unreal Wanted AAA England,South East England ...
Matt Gristetic
Check out the Game we we just finished!
Michael Shilliday
Just finished a set for Elane made in collaboration with @WudgieFudgie & @BlackbirdVoltive
David AMAZE
Pretty happy with how @GameJobsBot's new behavior is shaking out if I do say so myself. Hope it provides more value than pure #gamejobs RTs.
Climax Studios
We are very excited to announce that we have opened a new studio in Auckland, New Zealand.
GameJobs Feed
Art Director - Vicarious Visions: Activision: Art Director Vicarious Visions is looking for a tale...

Mobile Games Jobs
Database Engineer ("mobile" "game" publisher) - Nexon America, Inc. (United States): NEXON M...
Yannick Bianchette
CD Projekt Red is looking for an Audio Director:
#gameaudio #gamejobs
Laurence
AI Programmer (Unity5D) wanted for immediate start at Topsy Games
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Chris Holden
Starting new #JS4 level/project blockout right now #gamedev #gameart #twitch
Sucker Punch Careers
Tools and Pipeline Engineer - Bellevue, WA:
Alex Menas
Realistor
Games Jobs
#jobs 6 new jobs from interactive and Interactive Selection on our job board:

> Social media is a great way to reach new people – but be prepared to respond to every applicant

> **If candidates hear nothing, you will soon get a 'don't bother applying' reputation, which is the last thing you need when trying to grow.**

Next is to get the word out about your new job. One option is to go direct to market yourselves and advertise. Your website, newsletters and social media are great ways to reach your networks and, best of all, they are free. The only caveat here is to be 100 per cent prepared for response-handling. It's really important to respond to every applicant even if they aren't what you're looking for, so make sure someone has time to manage the applications. It can be damaging to your brand if candidates hear nothing and you will soon get a 'don't bother applying' reputation, which is the last thing you need when trying to grow.

Your recruitment process should be clear and efficient. Decide what you are assessing and select the most appropriate way to test this. At the heart of this will be an interview, so it's worth brushing up on some competency-based question techniques.

The best people are in demand and they have a choice. The candidate impressing you is only half the story – they are interviewing you as well. Think about what you offer as a developer and an employer. Consider your environment, culture, projects, IP, salary, holidays, benefits, location, brand, career progression – leave no stone unturned.

Once you've found the perfect new team member, protect the investment you have made with a solid starting induction programme. Whatever their level, be clear about your expectations and give your employee every chance of success you possibly can. Happy hiring. ■

Liz Prince is business manager at Amiqus. Every month, she helps solve some of the trickier problems job seekers currently face in the games industry

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